ENVIRONMENTAL ASSESSMENT

ASSEMBLY BILL 380
WATER RIGHTS ACQUISITION PROGRAM

PREPARED BY:

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
LAHONTAN BASIN AREA OFFICE

AUGUST 2000

ERRATA FOR THE ASSEMBLY BILL 380 WATER RIGHTS ACQUISITION PROGRAM ENVIRONMENTAL ASSESSMENT

CHANGES TO THE ENVIRONMENTAL ASSESSMENT (EA)

The number of mandatory signatories to the Truckee River Operating Agreement is five. There are eight additional potential signatories for a total of 13.

Throughout the EA where references are made to American peregrine falcon being listed as an endangered species under the Endangered Species Act of 1973, as amended, it is corrected to show the American peregrine falcon is no longer a listed species.

Throughout the EA where references are made mountain plover being listed as a candidate species for listing under the Endangered Species Act of 1973, as amended, it is corrected to show the mountain plover is proposed for listing as a threatened species.

The EA is corrected to note that recent surveys indicated that there are no western least bitterns nesting along the lower Truckee River. Cooper's hawk does nest along the lower Truckee River.

The following information on colonial nesting is incorporated into the EA:

Chapter 3 - Affected Environment

3.2 WILDLIFE

Lower Carson River Basin - Birds

Records indicate that colonial nesting bird species, such as California gull and Canada goose, have established nesting colonies on islands in Lahontan Reservoir. During some years, water level in the reservoir declines during the avian breeding season to such an extent that a land bridge forms from the mainland to the islands, making the islands accessible to predators such as coyotes. A single coyote is capable of eliminating most or all of the nesting efforts for an entire breeding season for those ground-nesting species. The California gull colony at Lahontan Reservoir is the largest such colony in the state of Nevada. Although the colony is important for this species in Nevada, it probably has minor significance for the species range wide. Similarly, the number of geese nesting at the reservoir have minor significance for the species range wide.

Chapter 4 - Environmental Consequences

4.2 ENDANGERED, THREATENED, CANDIDATE AND SENSITIVE SPECIES AND OTHER FISH AND WILDLIFE SPECIES

Lower Carson River Basin - Birds

A land bridge to Lahontan Reservoir island habitat occurs when the reservoir water surface elevation is less than 4,142 feet (less than 133,650 acre-feet of storage[1]). Based on modeling results completed for the EA (see Errata Table 1), a land bridge is likely to form between the months of April and July more frequently with implementation of the Proposed Action than is expected with the No Action Alternative.

Errata Table 1. Number of Years (out of 95) with Reservoir Water Surface Elevation of less than 4,124 feet During the Months April Through July

Current Condition	No Action	With A.B. 380
26	23	26

[1] Adjusted OCAP EA, October 1997, page 42.

Alternative 1 - No Action

When compared to the current condition, model results indicate land bridges would form less frequently with the No Action Alternative (see table above), denying access to potential predators. The lower number of years of land bridge formation would benefit colonial nesting bird species that nest on the ground by providing added protection from predators.

Alternative 2 - Proposed Action

Model results indicate that implementation of the Proposed Action would result in a more frequent land bridge formation compared to the No Action Alternative (see table above). The Proposed Action, therefore, provides less protection to ground nesting birds at Lahontan Reservoir than the No Action Alternative, increasing the rate of land bridge formation (and predator access) by approximately three percent in a 95 year period. While this higher access rate is likely to have an adverse impact on the ground nesting colonies at Lahontan Reservoir, it is not expected to have a significant effect on the California gull or Canada goose populations region-wide or the overall status of either species.

CONTENTS

CHAPTER 4 - ENVIRONMENTAL CONSEQUENCES

Figures

Tables

LIST OF ACRONYMS

AAM .....annual arithmetic mean
A.B. 380 .....Nevada Assembly Bill Number 380
CWSD .....Carson Water Subconservancy District

DEIS.....draft Environmental Impact Statement
EA .....Environmental Assessment
ESA.....Endangered Species Act

Fund .....Newlands Project Water Rights Acquisition Fund
FWS .....U.S. Fish and Wildlife Service
ITAs .....Indian trust assets

LCT .....Lahontan cutthroat trout
NDOW .....Nevada Division of Wildlife
OCAP.....1997 Adjusted Newlands Project Operating Criteria and Procedures

PM_{10} .....particulate matter
ppm .....parts per million
Reclamation .....U.S. Bureau of Reclamation

SPPC .....Sierra Pacific Power Company
State Engineer.....Nevada State Engineer
TCID .....Truckee-Carson Irrigation District

TDS.....total dissolved solids
Tribe.....Pyramid Lake Paiute Tribe
TROA.....Truckee River Operating Agreement

WMA .....Wildlife Management Area
WQSA.....Truckee River Water Quality Settlement Agreement

GLOSSARY

A

acre-foot: Volume of water (43,560 cubic feet) that would cover one acre to a depth of one foot.

affected environment: Existing biological, physical, social, and economic conditions of an area subject to change, both directly and indirectly, as the result of a proposed human action. Also, the chapter in an environmental impact statement describing current environmental conditions.

air quality: Measure of the health-related and visual characteristics of the air, often derived from quantitative measurements of the concentrations of specific injurious or contaminating substances.

alternatives: Courses of action which may meet the objectives of a proposal at varying levels of accomplishment, including the most likely future conditions without the project or action.

aquifer: Stratum or zone below the surface of the earth containing water.

archeology: Study of human cultures through the recovery and analysis of their material relics.

B

bench land: Eligible land with a water duty of 4.5 acre-feet per acre per year.

bottom land: Eligible land with a water duty of 3.5 acre-feet per acre per year.

C

candidate species: Plant or animal species not yet officially listed but which are undergoing a status review as published in the *Federal Register* by the U.S. Fish and Wildlife Service, are candidates for possible addition to the list of threatened and endangered species.

Carson Division: The Carson Division of the Newlands Project is located entirely within Churchill County; it contains about 67,840 acres of water-righted land and is supplied by a combination of Carson and Truckee River water from Lahontan Reservoir.

Carson River Basin: The area which naturally drains into the Carson River and its tributaries and into the Carson River Sink, but excluding the Humboldt River drainage area.

cultural resource: Any building, site, district, structure, or object significant in history, architecture, archeology, culture, or science.

D

delivery: The amount of irrigation water delivered to a water user's headgate during the irrigation season.

dissolved inorganic nitrogen: Nitrogen primarily in the form of nitrite, nitrate, or ammonia.

diversion: A structure in a river or canal that diverts water from the river or canal to another water course.

drain: A canal that collects and transports excess water from irrigated farmland.

drainwater: See *irrigation drainwater*.

E

emergent vegetation: Aquatic plans having most of the vegetation parts growing above water.

endangered species: A species or subspecies whose survival is in danger of extinction throughout all or a significant portion of its range.

erosion: Refers to soil and the wearing away of the land surface by water, wind, ice, or other physical processes.

F

Fallon Indian Reservation: The lands set aside for the benefit of the Fallon Paiute-Shoshone Tribe by the orders of the Department of the Interior on April 20, 1907, and November 21, 1917, as expanded and confirmed by the Act of August 4, 1978, Public Law 95-337, 92 Stat. 457.

G

ground water: Water beneath the ground, consisting mostly of surface water that has seeped down.

H

habitat: Area where a plant or animal lives.

I

indigenous: Native to the area.

inundate: To cover with impounded waters or floodwaters.

irrigation delivery: Refers to the delivery of water for irrigation purposes.

irrigation drainwater: Ideally, subsurface water which flows from irrigated land and generally transports higher concentrations of dissolved salts than the water applied to the land; practically, any water which flows from the Newlands Project for which there is no claim to satisfy an agricultural water right.

irrigation return flow: Water which reaches surface drainage by overland flow or through groundwater discharge as a result of applied or natural irrigation.

L

Lahontan Valley wetlands: Wetland areas associated with Stillwater National Wildlife Refuge, Stillwater Wildlife Management Area, Carson Lake and Pasture, and Fallon Indian Reservation, as designated in Public Law 101-618.

lower Truckee River: The Truckee River downstream from Derby Diversion Dam.

M

M&I: Municipal and industrial use of water supply.

marsh: A periodically wet or continually flooded area where the water is shallow enough to allow the growth of emergent vegetation such as sedges, rushes, and cattails.

model: A mathematical formula that expresses the actions and interactions of the elements of a system in such a manner that the system can be evaluated under any given set of conditions.

N

National Register of Historic Places: A federally maintained register of districts, sites, buildings, structures, architecture, archeology, and culture.

Newlands Irrigation Project: A project, initiated with the passage of the Reclamation Act in 1092, that was designed to irrigate land.

Newlands Project efficiency: The ratio of irrigation delivery demand to Lahontan Reservoir releases, excluding spills.

O

operation and maintenance (O&M) costs: Charges paid by water users for delivery of water in the Newlands Project that are paid to the Newlands Project operator for reasonable and customary operation and maintenance of the delivery system.

overstory: The portion of the trees or shrubs that form the uppermost portion of the canopy layer.

P

primary wetlands: Wetlands (see definition of wetlands) located within Stillwater National Wildlife Refuge, Stillwater Wildlife Management Area, Carson Lake and Pasture, and the Fallon Indian Reservation (i.e., the Lahontan Valley wetlands designated by Public Law 101-618).

public involvement: Process of obtaining citizen input into each stage of development of planning documents. Required as a major input into any EIS.

R

raptor: A bird of prey, such as a hawk, eagle, or owl.

recreation day: A standard unit of use consisting of a visit by one individual to a recreation area for recreation purposes during any reasonable portion or all of a 24-hour period.

riparian: Of, on, or pertaining to the bank of a river, pond, or lake.

riparian corridor: River and streams with their associated vegetation.

riverine: Pertaining to a river.

reservoir: Artificially impounded body of water. "Reservoir" includes the dam, spillway, etc., because it is assumed the reservoir is used for storage and regulation of water and thus includes these associated "facilities." Reservoir also includes the storage on a natural lake created by a dam, such as Donner and Independence Lakes, or artificial lakes used to store water for community use.

return flows: Flows from agricultural drainwater that return to the drains in the Newlands Project and flow to terminus areas.

S

scour: Removing debris and sediments from a channel by the force of water.

secondary wetlands: Wetland habitat in the study area that are not associated with Stillwater National Wildlife Refuge, Stillwater Wildlife Management Area, Carson Lake and Pasture, and the Fallon Indian Reservation. These areas are not part of the primary wetlands mandated to be sustained by Public Law 101-618. The term "secondary" denotes location; it does not identify the relative importance to wetland-dependent wildlife.

sediment: Unconsolidated solid material that comes from weathering of rock and is carried by, suspended in, or deposited by water or wind.

shorebirds: Birds that forage along the edge of lakes, reservoirs, wetlands, and rivers, such as sandpipers, plovers, and killdeer.

shrubs: Plants with woody stems, generally less than 20 feet tall, such as willows.

spill: Any discharge from a lake or reservoir that is not a release.

surface water: A body of water that has its upper surface exposed to the atmosphere.

streamflow: Water flowing within the bounds of a channel (mostly natural channels, but can be natural channels that have been modified). Contributing components of streamflow include tributaries from other streams, base flow (from groundwater), surface runoff, and direct precipitation.

T

terminus: The end point of a stream or river. Pyramid Lake is the terminus for the Truckee River.

threatened species: Any species which has the potential of becoming endangered in the near future.

Truckee Division: The Truckee Division of the Newlands Project is located near Fernley, contains about 6,000 acres of water-righted land, and is irrigated with water from the Truckee River.

Truckee-Carson Irrigation District (TCID): The contracted operator of the Newlands Irrigation Project.

Truckee River Operating Agreement: The agreement to be negotiated among the Secretary of the Interior, the states of Nevada and California, Sierra Pacific Power Company, the Pyramid Lake Paiute Tribe, and other users of the waters of the Truckee River.

Truckee River basin: The area which naturally drains into the Truckee River and its tributaries and into Pyramid Lake, including that lake, but excluding the Lake Tahoe basin.

U

upland: An area where water normally does not collect and where water does not flow on an extended basis. Uplands are not wetland areas.

W

water duty: The maximum rate at which water can legally be delivered to a farm head gate to satisfy a water right, usually expressed in acre-feet per acre per year.

waterfowl: A group of birds that include ducks, geese and swans (belonging to the order Anseriformes).

water-righted acreage: The land base for which there are water rights.

water rights: A grant, permit, decree, appropriation, or claim to the use of water for beneficial purposes, and subject to other rights of earlier date of use, called priority, or prior appropriation.

wetland habitat: Habitat provided by shallow or deep water (but less than six feet deep), with or without emergent and aquatic vegetation in wetlands.

wetlands: Lands transitional between aquatic and terrestrial systems where the water table is usually at or near the land surface or the land is covered by shallow water. Often called marshes or wet meadows.

wildlife: All non-domesticated animal life; included are vertebrates and invertebrates.

CHAPTER 1

INTRODUCTION
PURPOSE OF AND NEED FOR ACTION

1.1 PROPOSED ACTION

The action considered in this environmental assessment (EA) is for the Bureau of Reclamation (Reclamation) to provide $7-10 million in appropriated funds over a period of approximately five years to partially support the Newlands Project Water Rights Acquisition Fund (Fund) program. The United States, through Public Law 106-60, has appropriated funds to be granted to the Fund. A total of approximately $13-$16 million of Federal, State, and private monies will be available to the Fund. Nevada Assembly Bill Number 380 (A.B. 380) created the Fund to acquire, abandon and retire 6,500 acres of surface water rights in Reclamation's Newlands Project. A copy of A.B. 380 is attached in Appendix A.

1.2 PURPOSE OF AND NEED FOR PROPOSED ACTION

The Federal funds identified in the Proposed Action will provide necessary financial support to the A.B. 380 water rights acquisition and retirement program. The purpose of the acquisition and retirement program is to provide a mechanism to resolve certain administrative and judicial proceedings involving challenges to Newlands Project water rights. These proceedings are time consuming and costly for all parties involved, and the need for resolution led to the acquisition and retirement program. The Federal money must be available to the Fund as part of the funds needed for acquisition of up to 6,500 acres of water rights or the agreement to resolve relevant litigation will be terminated.

1.3 LOCATION OF ANALYSIS AREA

The location of the affected area being analyzed in the EA includes the lower Truckee River corridor below Derby Dam, Pyramid Lake, the Bureau of Reclamation's Newlands Project, and the Carson River terminus areas downstream of the Newlands Project (Figure 1.).

The Newlands Project is a federal irrigation project authorized by Congress in 1902 to provide for the irrigation of farmland in the vicinity of Fernley and Fallon, Nevada. Water for the irrigation project comes from both the Truckee and Carson rivers. Both rivers originate in the eastern Sierra Nevada mountains along near the California - Nevada border.

The Truckee River is the more northerly of the two rivers and originates at the point of outflow from Lake Tahoe. It flows from Lake Tahoe approximately 105 miles to its terminus at Pyramid Lake located within the Pyramid Lake Indian Reservation. Approximately 38 miles upstream from Pyramid Lake, if certain criteria are met, some of the Truckee River flows may be diverted

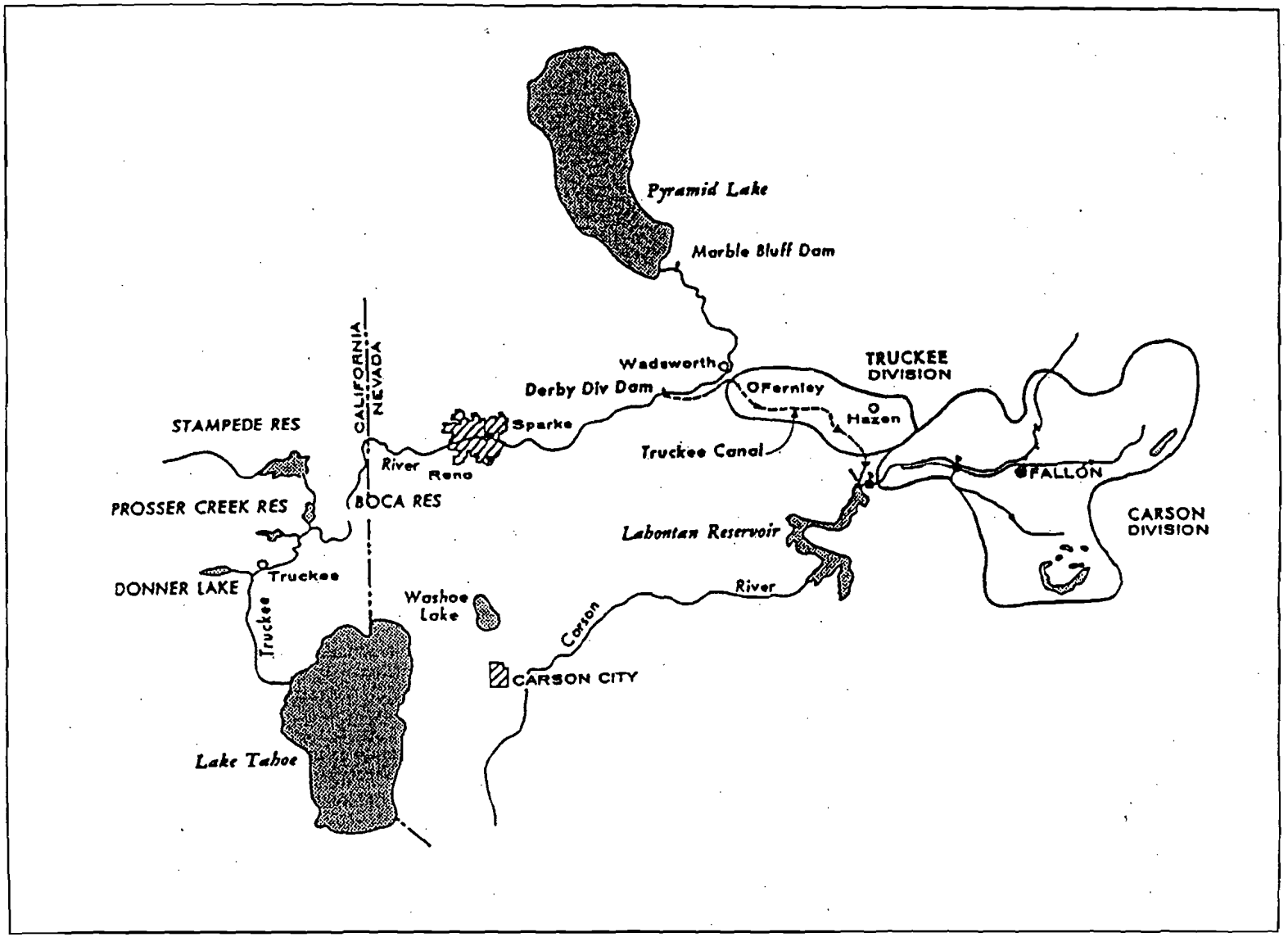

Figure 1. Truckee River and Carson River Basins

at Derby Dam and flow 32 miles to Lahontan Reservoir in the Carson River basin via the Truckee Canal.

The Carson River originates south of Lake Tahoe and flows into Nevada to Lahontan Reservoir where the water is stored. Water released from Lahontan Dam flows through the Newlands Project via the Carson River and a series of irrigation canals and drains; downstream of the Newlands Project the water flows to wetland areas and on to the Carson Sink if flows are high enough.

1.4 BACKGROUND

The Newlands Project has had a long history in the Truckee-Carson river basins of contentious administrative and judicial disputes regarding the forfeiture, abandonment or failure to perfect surface water rights. Currently in the Newlands Project there are approximately 7,468 acres of water-righted land for which the Pyramid Lake Paiute Tribe (Tribe) has filed petitions with the Orr Ditch and Alpine Decree courts alleging certain rights are imperfected or have been forfeited and abandoned. Additionally there are approximately 1,961 acres of protested water-righted land (some of these acres may overlap with petitioned acres) where the water right owner filed an application with the State Engineer to change the place of use of the water rights and the Tribe protested the change. On May 5, 1999, the United States District Court ruled that the United States shall not prohibit or prevent Truckee-Carson Irrigation District (TCID) from delivering water to the transfer applicants. It is anticipated that appeals to this ruling may be filed.

A.B. 380, passed in the 1999 session of the Nevada State Legislature, was negotiated by a group of Tribal, local and government interests affected by the longstanding conflicts and was designed to help settle some of these long-standing disputes. This purchase and retirement program is designed to achieve in part, both the Tribe's goal of reducing Truckee River diversions and the water users' goals of obtaining compensation for their challenged water rights or removal of the legal challenge to those rights.

A Joint Testimony on A.B. 380 (Appendix B) dated May 6, 1999 was provided before the Nevada State Senate Committee on Natural Resources. The Joint Testimony provides background information on the issues, explains the purposes of the bill, and acknowledges the commitments and agreements of the signatories to the testimony. The signatories to the Joint Testimony included the Tribe, TCID, Sierra Pacific Power Company (SPPC), Churchill County, and the City of Fallon. The section of the Joint Testimony on providing Federal funds to acquire water rights that pertains to the action analyzed in this EA is summarized in the following paragraphs.

The Administrative Provisions section of the 1980 Alpine Decree states that changes in the place of diversion, place of use or manner of use of Nevada water rights adjudicated by the Decree are to be directed to the Nevada State Engineer (State Engineer). Decisions made by the State Engineer may be appealed to the Alpine Court.

Beginning in 1984, Newlands Project water users have filed numerous applications with the State Engineer to change the place of use of Newlands Project water rights. Most of these change applications have been protested by the Tribe. Many were protested based upon assertion that the applications involved the transfer of water rights which had been forfeited and abandoned.

The State Engineer and the federal courts have issued decisions on the change applications and protests, but few final decisions on individual applications have been entered. The State Engineer and many water users have disagreed with court interpretations of Nevada law concerning forfeiture, abandonment and failure to perfect water rights.

In the petitions filed in 1993 by the Tribe, it was alleged that certain water rights within the Newlands Project are either unperfected or have been forfeited or abandoned. These petitions have been referred to the Federal Water Master and a final outcome is years or possibly decades away.

Section 4 of A.B. 380 and agreements and commitments of the Joint Testimony signatories provide a stimulus for resolving the protests to Newlands Project change applications and the pending petition cases. Alternative 2 in Chapter 2 of this EA fully describes the proposed action and how the protests and petition cases would be resolved under this alternative.

1.5 AUTHORITY

The Newlands Project Water Acquisition Fund is authorized in the 1946 Public Law 79-732, Fish and Wildlife Coordination Act, Section 1, which states in part:

> "For the purpose of recognizing the vital contribution of our wildlife resources to the Nation, the increasing public interest and significance thereof due to expansion of our national economy and other factors, and to provide that wildlife conservation shall receive equal consideration and be coordinated with other features of water-resource development programs through the effectual and harmonious planning, development, maintenance, and coordination of wildlife conservation and rehabilitation for the purposes of this Act in the United States, its Territories and possessions, the Secretary of the Interior is authorized (1) to provide assistance to, and cooperate with, Federal, State, and public or private agencies and organizations in the development, protection, rearing, and stocking of all species of wildlife, resources thereof, and their habitat, . . ."

1.6 RELATED WATER ACQUISITION ACTIONS

Final Environmental Impact Statement Water Rights Acquisition for Lahontan Valley Wetlands (U.S. Fish and Wildlife Service, 1996). This FEIS authorized the acquisition of water to sustain an average of 25,000 acres of wetlands in the Lahontan Valley. Since water rights acquisitions

for the Lahontan Valley wetlands began under various programs in 1989, 20,445 acre-feet have been purchased by the U.S. Fish and Wildlife Service (FWS) from the Carson Division of the Newlands Project. An additional 4,005 acre-feet of water rights have been acquired from the Carson River upstream of Lahontan Reservoir.

Truckee River Water Quality Settlement Agreement (WQSA) (signed on October 10, 1996). A Draft Environmental Impact Statement (DEIS) is currently being prepared to evaluate the federal action proposed as part of the WQSA. As described in the Agreement, the federal action is to acquire a total of $12 million of Truckee River water rights. Water rights are anticipated to be acquired from willing sellers in the Truckee Meadows, the Truckee River corridor between Vista and Derby Dam, and from the Truckee Division of the Newlands Project. The volume of water rights to be acquired from each of area will be dependent on a number of factors, including cost per acre-foot, and availability of willing sellers. Presently, federal funds are expected to secure a total of 9,000 -12,000 acre-feet of Truckee River water rights for this program. A majority of those water rights are anticipated to be acquired from the Truckee Division.

Acquisition of Water by the State of Nevada for the Carson Lake and Pasture A $9 million bond was passed by voters in Nevada to acquire water rights for the benefit of wetlands in the Lahontan Valley. Under this bond, the State of Nevada has purchased approximately 8,500 acre-feet of water rights from Newlands Project water users for Carson Lake and Pasture.

Acquisition and Use of Land and Water Rights for the Fallon Tribe (section 103 of Public Law 101-618). This section authorized the expenditure of funds for several purposes including acquisition of water rights. The maximum amount of water rights that could be purchased would not exceed 8,450 acre-feet of water rights to be used to irrigate 2,415.3 total acres. Of the 20,445 acre-feet of water rights acquired by the FWS for Lahontan Valley wetlands, 597 acre-feet has been purchased for the Fallon Paiute-Shoshone Tribe.

1.7 SUMMARY OF LAWS AND REGULATIONS

Endangered Species Act

The Endangered Species Act (ESA) provides for the protection and conservation of plant and animal species designated by the Secretary of the Interior as “endangered” or “threatened.” An "endangered species" is defined as a species in danger of extinction throughout all or a significant portion of its range. A "threatened species" is defined as a species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

Farmland Protection Policy Act

Passed by Congress in 1981, the act directs federal agencies to consider the potential effects of their programs on the conservation of farmland. The act does not require federal agencies to

modify a proposed project solely to avoid or minimize the effects of converting farmland to non-agricultural purposes so long as adverse impacts are evaluated and potential alternatives to lessen adverse impacts are considered.

Indian Trust Responsibilities

Federal agencies, including Reclamation, have a responsibility to protect and maintain assets held by the United States in trust for a tribe. Those assets include water rights, minerals and other natural resources. The federal government must carry out its activities in a manner that protects trust assets and avoids adverse impacts when possible, and, if not, provide appropriate mitigation or compensation.

1.8 CONSULTATION AND COORDINATION

As discussed in section 1.4, the proposed action in this EA was negotiated by a group of Tribal, local and government interests as part of A.B. 380. The Joint Testimony on A.B. 380 included the signatures of the Tribe, TCID, SPPC, Churchill County, and City of Fallon.

Indian Trust Consultation and Coordination

Two Native American Tribes hold land bases in the study area: Pyramid Lake Paiute Tribe and the Fallon Paiute-Shoshone Tribe. Two meetings were held (March 13 and April 11, 2000) in coordination with the Pyramid Lake Paiute Tribe and others to evaluate and determine if there would be adverse effects from A.B. 380 on the trust assets of that tribe. No effects are expected from the proposed action to trust assets of the Fallon Paiute-Shoshone Tribe. Known trust assets and impacts are described under "Indian Trust Assets" in chapters 3 and 4 for both tribes.

ESA Consultation and Coordination

Section 7 of ESA prohibits Federal agencies from authorizing, funding, or carrying out activities that are likely to jeopardize the continued existence of a listed species or destroy or adversely modify its critical habitat. By consulting with FWS before initiating projects, agencies review their action to determine if these could adversely affect listed species or their habitat.

Through consultation, FWS works with other Federal agencies to help design their programs and projects to conserve listed and proposed species. A significant number of listed species either occur on Federal lands or are potentially affected by Federal activities. FWS coordination with other Federal agencies is crucial to species conservation and may help prevent the need to list candidate species.

Informal consultation under ESA was conducted between Reclamation and the FWS on the effects of the proposed project on listed species.

EA Scoping Summary

A Notice of Intent to prepare an environmental document and announcing four public meetings was published in the *Federal Register* (Volume 62, Number 77, pages 21209 - 21210) on April 20, 2000. In May 2000, four public meetings were held by Reclamation in Fallon, Fernley, Nixon and Carson City, Nevada to gather information to assist in preparation of the EA. A press release and informational notice announcing the public scoping meetings and the preparation of an EA was provided to news media in those communities as well as the communities of Reno/Sparks, Nevada. A mailing announcing the public workshops was also sent to a list of parties known to be interested in A.B. 380. In addition to the workshops, interested parties were invited to submit written comments. Written comments on the A.B. 380 proposed project were accepted through May 25, 2000.

The following were represented at the public workshops:

Individual farmers and ranchers	Fallon Paiute-Shoshone Tribes
Newlands Water Protective Association	Truckee-Carson Irrigation District
Congressman Jim Gibbons' Office	City of Fallon
Fernley Leader (newspaper)	Lahontan Valley News (newspaper)
Churchill County	Assemblywoman Marcia DeBraga
Carson Water Subconservancy District (CWSD)	Town of Fernley

The mailing list of interested parties receiving a copy of the EA is located in Appendix C.

Issues Identified During Scoping Process

Many questions were asked at the public meetings about how the water acquisition program would be implemented. The CWSD is administering that program and is currently drafting procedures for the process of purchasing water rights under A.B. 380. The CWSD is required under the Joint Testimony to develop guidelines for acquisition of water rights in consultation with representatives of the federal, state, tribal and local governments and affected parties; there is also a requirement for the CWSD to prepare an annual report for public review. The 71st regular session of the Nevada Legislature will review compliance with the Joint Testimony. The CWSD purchase process is not being analyzed in this EA; rather, this EA is analyzing the environmental effects associated with Reclamation providing funding to the water acquisition program.

Environmental resources identified during the public scoping process that might be affected by the proposed action of Reclamation providing funding to acquire water rights under A.B. 380 include the following:

- Water resources, including ground water quality and quantity, groundwater recharge, and surface water quality and quantity
- Air quality
- Aquatic and wetland resources
- Indian Trust Assets
- Fish and wildlife
- Endangered and threatened species
- Agricultural activities in the Newlands Project
- Water rights and the value of water rights transactions in the community
- Potential cumulative effects from: acquisition of water rights under the WQSA, U.S. Fish and Wildlife Service FEIS *Water Rights Acquisition for Lahontan Valley Wetlands*, and other acquisition programs

These issues and other environmental resources are described in Chapter 3 Affected Environment, while the potential impacts of the proposed action and the alternatives on the environmental resources are described in Chapter 4 Environmental Consequences.

Participating Agencies

The following agencies have jurisdiction over some aspect of implementing the A.B. 380 water acquisition program or have special expertise to contribute to the EA:

U.S. Department of the Interior
    Fish and Wildlife Service
    Bureau of Reclamation
    Bureau of Indian Affairs
U.S. Environmental Protection Agency
Pyramid Lake Paiute Tribe
State of Nevada, Department of Conservation and Natural Resources
Carson Water Subconservancy District

CHAPTER 2

ALTERNATIVES

2.1 ALTERNATIVE 1 - NO ACTION

Under the No Action Alternative, no funding would be provided by Reclamation to the CWSD, a multi-county water conservancy district, for the Newlands Project Water Rights Acquisition Fund as outlined in A.B. 380 and the Joint Testimony. The Fund would not have adequate monies to acquire, retire and abandon the target amount of 6,500 acres of water rights in the Newlands Project. Without Reclamation's funding, the Fund would also not have adequate monies to fully reimburse TCID as a negotiated offset for lost operating and maintenance revenues associated with the retirement and abandonment of water rights under the water purchase program.

Reaching the 6,500-acre target is a requirement specified in the Joint Testimony. If the target is not achieved, the Tribe would not dismiss remaining petition cases and withdraw or dismiss any then remaining water rights transfer protests. Under the No Action alternative 6,500 acres of water rights would not be acquired and the anticipated withdrawals and dismissals would not occur.

Assumptions:

The No Action Alternative is not a continuation of existing conditions in perpetuity; rather it is a reasonable prediction of foreseeable future conditions that would occur without the proposed action of funding the A.B. 380 program. Therefore, several assumptions related to the No Action Alternative are considered in this document as follows:

1. This alternative assumes that the probable rate of success (win/loss record) that the Tribe, together with the United States, would have in litigation of the challenged water rights cases (the water transfer and petition cases) is 60:40. This 60:40 ratio is used to analyze the environmental consequences of this alternative. The ratio was determined through two evaluations. An evaluation was first made of comments received from the State Engineer, CWSD, and the Tribe on their recommendations of the appropriate win/loss projection in litigation of the challenged water rights cases. A second independent evaluation was made by Reclamation of the win/loss records of the Tribe (together with the United States) and the water users, respectively, at each state of the ongoing administrative and judicial actions. Both of these evaluations were used by Reclamation to make the projected prediction of the win/loss record if the cases were litigated to conclusion.

   Appendix D contains a Reclamation letter discussing this issue and how the 60:40 ratio

was determined (attachments to the letter are available upon request from Reclamation's Lahontan Basin Area Office). There is additional discussion of this issue under Indian Trust Assets in the affected environment and environmental consequences sections of this EA.

2. A suitable comparison between the No Action Alternative, which projects conditions after litigation is settled in the future, and the Proposed Action Alternative, requires that both alternatives be analyzed for reasonably foreseeable future conditions of approved projects. Therefore, for both alternatives the analysis in this EA assumes that all of the additional water-rights planned for acquisition under the FWS Water Rights Acquisition for Lahontan Valley Wetlands have been completed. This allows a comparison of predicted future conditions that would occur within the same approximate time frame.

2.2 ALTERNATIVE 2 - PROPOSED ACTION

Funding for the Newlands Project Water Rights Acquisition Program:

Under this alternative Reclamation would provide $7-$10 million in Congressionally-appropriated funds to the CWSD over a period of approximately five years to partially support the Newlands Project Water Rights Acquisition Fund (Fund) program. CWSD will manage and administer the program funds, including Federal funds, for the purpose of acquiring, retiring and abandoning up to 6,500 acres of surface water rights in the Newlands Project. A portion of the Fund will also be allocated to TCID as a negotiated offset for lost operating and maintenance revenues associated with the retirement and abandonment of the 6,500 acres of water rights. This action is outlined in section 4 and 5 of A.B. 380 and Section III A. of the Joint Testimony.

Other expected funding sources include the State of Nevada ($4 million) and Sierra Pacific Power Company or its affiliates ($2.5 million). The CWSD may also accept gifts and grants from itself, the Carson-Truckee Water Conservancy District and any other interested parties.

Water will be purchased only from willing sellers. The CWSD will establish criteria for determining fair market value of the water rights to be acquired. Acquired water rights may, but need not be, water rights under challenge in the change application proceedings and petition cases. Water rights to be acquired may be either active or inactive.

Agreements Related to Certain Administrative and Judicial Proceedings Involving Challenges to Newlands Project Water Rights:

The Tribe will withdraw or dismiss remaining protests to change applications or appeals from the State Engineer or court rulings and will dismiss its remaining petition cases when: the total of (a) water rights irrevocably committed to sale, retirement and abandonment and (b) water rights determined to be abandoned or forfeited through the Tribe's protests or petition cases equals 6,500 acres of water rights.

During the period of implementation of the water acquisition program, the Tribe has also agreed to the following:

1. The Tribe will agree to a stay of any pending protested change application or petition upon request of an applicant or respondent.

2. A water right owner may proceed with the administrative and judicial proceedings involving the owner's water right. If the outcome is a determination that all or any portion of the water right has been abandoned or forfeited, the Fund will pay the Tribe an amount equal to the fair market value of that water right.

3. The Tribe has agreed to early withdrawal of protests and dismissal of litigation with respect to particular water rights in certain circumstances as follows: for each water right for which an owner of a challenged water right obtains an irrevocable commitment of sale and retirement of an unchallenged water right through the Fund, the Tribe will immediately withdraw and/or dismiss its challenge to an equal amount of water right of that owner.

Timeline:

The authority to acquire water rights under A.B. 380 will terminate when the 6,500 acres of water rights are retired and abandoned, whether by acquisition by the Fund or by any other process, including the final outcome of the Tribe's protests to change application and petition cases. The authority under section 4 of A.B. 380 to acquire Newlands Project water rights will expire on July 1, 2004.

Assumption:

As noted under the No Action Alternative, a suitable comparison between the No Action Alternative, which projects conditions after litigation is settled in the future, and the Proposed Action Alternative, requires that both alternatives be analyzed for reasonably foreseeable future conditions of approved projects. Therefore, for both alternatives the analysis in this EA assumes that all of the additional water-rights planned for acquisition under the FWS Water Rights Acquisition for Lahontan Valley Wetlands have been completed. This allows a comparison of predicted future conditions that would occur within the same approximate time frame.

2.3 ALTERNATIVES ELIMINATED FROM DETAILED STUDY

A.B. 380 is the result of negotiations concluded in the Nevada Legislature by TCID, SPPC, Churchill County, City of Fallon and the Tribe. The A.B. 380 water acquisition program settles litigation brought by the Tribe, City of Fallon and Churchill County, and was formally accepted by all negotiating parties in May 1999. Therefore, no alternative variations of A.B. 380 or the

Joint Testimony agreements are considered in this EA. The proposed action represents the federal obligations as outlined in the negotiated bill and Joint Testimony, and Public Law 101-618.

2.4 COMPARISON OF ALTERNATIVES

The following table summarizes the primary changes that would occur in the analysis area under the two alternatives. Additional data is presented in table 4.1 in Chapter 4.

Table 2.1 Comparison of Results for Current Condition, No Action and A.B. 380

	Current[1]	**No Action (60:40)**[2]	**A.B. 380**[3]	**A.B. 380 vs. No Action**
TRUCKEE RIVER BASIN				
Average Diversion at Derby Dam (acre-feet)	*94,100*	105,200	101,000	**-4,200**
Truckee River Inflow to Pyramid Lake (acre-feet)	*477,600*	466,700	470,800	**4,100**
Ending Pyramid Lake Elevation in 95 years (feet)	*3,839.6*	3,835.0	3837.1	**2.1**
Ending Adult Female Cui-ui	*605,700*	333,600	392,200	**58,600**
A.B. 380 Truckee Division Acquisitions (acres)	*0*	0	65	**65**
CARSON RIVER BASIN				
Total Newlands Project Active Water Rights (acres)	*59,963*	63,735	62,892	**-843**
Lahontan Reservoir Release and Spill (acre-feet)	*309,500*	313,500	304,400	**-9,100**
Total Lahontan Valley Wetlands Water Supply (acre-feet)	*62,700*	114,300	111,400	**-2,900**
Primary Wetland Habitat (acres)	*13,597*	24,368	23,556	**-812**
A.B. 380 Carson Division Acquisitions (acres)	*0*	0	6,435	**6,435**

[1] Current Condition does not include 9,429 water-righted acres that are currently under litigation.
[2] Assumes Tribe prevails in 60% of current water rights litigation in the Newlands Project and completed FWS Wetlands Water Rights Acquisition
[3] 65 acres of water rights acquired and retired in the Truckee Division and 6,435 acres in the Carson Division and completed FWS Wetlands Water Rights Acquisition

CHAPTER 3

AFFECTED ENVIRONMENT

The analysis area for this EA encompasses the lower Truckee River corridor below Derby Dam, Pyramid Lake, the Bureau of Reclamation's Newlands Project, and the Carson River terminus areas downstream of the Newlands Project (Figure 1). The environmental characteristics of this area have been thoroughly described in three recent environmental documents that are hereby incorporated by reference: *Final Environmental Impact Statement Water Rights Acquisition for Lahontan Valley Wetlands* (U.S. Fish and Wildlife Service, 1996); *Draft Environmental Impact Statement Truckee River Operating Agreement* (U.S. Department of the Interior, 1998); and *Environmental Assessment Adjusted 1988 Newlands Project Operating Criteria and Procedures* (U.S. Department of the Interior, 1997). The following description of the Affected Environment is primarily summarized from those publications.

3.1 VEGETATIVE COMMUNITIES

Riparian Communities Along the Carson and Truckee Rivers

Within the analysis area of this EA, riparian plant communities, including riparian scrub and riparian forests, are associated intermittently along the lower Truckee River from Derby Dam to Pyramid Lake and along the lower Carson River from Lahontan Reservoir downstream to the Carson Sink. Riparian scrub habitat is characterized by broad-leafed, deciduous willow thickets with abundant narrow-leaf willows, yellow willows, and shining willows. Herbaceous species found in riparian scrub include white sweet clover, white clover, broad-leaved peppergrass, and slender-beak sedge. Riparian forests are characterized primarily by cottonwood-willow stands, with Fremont cottonwoods being the sole dominant tree species.

The cottonwood-willow riparian forests of the lower Truckee River have been greatly reduced from historic populations, and high river flows which promote cottonwood regeneration have been substantially diminished in recent decades as snowmelt and runoff is stored in or diverted to reservoirs in the upper watershed. Cottonwood trees live an average of 200 years. Continuous regeneration of replacement trees is needed to provide for optimum long-term maintenance of the cottonwood forests. An annual flow regime has been recommended by the Tribe to establish cottonwoods on lower terraces along the lower Truckee River. When sufficient water is available, several entities, including FWS, Reclamation and the Tribe have cooperated to implement the regime such that river flows are modified to encourage seedling establishment throughout the growing season. This type of regime has been implemented over several years beginning in 1995. While there is no formal agreement among agencies involved in this effort, it is anticipated that this flow regime will continue to be implemented during appropriate water years to promote cottonwood and willow recruitment along the river.

Cottonwood trees surround Lahontan Reservoir, but lower reservoir operating levels and drought

periods have combined to greatly reduce the number of live trees. However, the gallery cottonwood stands and willow understory in the area west of Lahontan Reservoir delta are some of the most complete of such habitats in the state. Other riparian species in the Lahontan Reservoir area include black willows, sand bar willows, Russian olive, buffaloberry, sweet clover, meadow clover, white top, peppergrass, and salt cedar.

The Carson River corridor downstream from Lahontan Reservoir provides approximately 30 miles of riparian habitat. Cottonwoods are widespread in Lahontan Valley due to the high water table associated with irrigation activities and use of the trees for landscaping and windbreaks. In addition, Newlands Project drains and canals have created strips of riparian habitat. A number of drains and canals contain extensive populations of willows, cottonwoods, sedges, rushes, and cattails.

Wetland Plant Communities

Along the Truckee River below Derby Dam, the primary wetland type is transmontane freshwater marsh characterized by erect, rooted, herbaceous plants adapted to live in very wet habitats often called emergent vegetation (Cowardin et. al., 1979). Below Derby Dam there is only approximately 15 acres of this type of marsh wetland; five acres between Dead Bow Ox and Numana Dam and ten acres between Numana Dam and Marble Bluff Dam (U.S. Fish and Wildlife Service, 1993). These wetlands are dominated by such plants as cattails, bulrushes, common reed, sedges and rushes. These wetlands require frequent inundation or a high water table and can not tolerate long periods of drought. When streamflows are low, portions of the Truckee River stream bed may also become vegetated with emergent and other herbaceous species. This occurs in dry years and varies in location and extent, depending on streamflow and gravel deposition.

Under usual conditions, the FWS estimates that there are approximately 16,000 acres of wetlands in Lahontan Valley. The Newlands Project has altered the natural hydrologic regime of the wetlands in Lahontan Valley. Inflow to current wetlands is dictated by agricultural practice and comes in a reduced, protracted flow from March through November, usually without a substantial flushing flow in the spring. Episodic flooding, usually resulting from springtime snowmelt and runoff is usually intercepted by Lahontan Reservoir and stored for downstream irrigation purposes. Since the early 1900s, Lahontan Valley wetlands have subsisted on irrigation seepage losses, drain water return flows, tail water, and periodic spills during high water years.

The FWS is presently in the process of acquiring water rights sufficient to support a long term average of 25,000 acres of primary wetlands in the valley. These primary wetlands include the Stillwater National Wildlife Refuge, Carson Lake and Pasture and the Fallon Paiute-Shoshone Indian Reservation wetlands. An estimated 125,000 acre-feet of water is needed to support the 25,000-acre goal wetland size; these acquired water rights will supplement drain water, Lahontan Reservoir spills, water being acquired by the State of Nevada, and water previously acquired by the FWS.

Secondary wetlands in the analysis area include habitats associated with the Fernley Wildlife Management Area (WMA), Massie and Mahala Sloughs, Soda Lake, Sagouspi Dam, Harmon Reservoir, S-Line Reservoir, Indian Lakes, and the Canvasback Gun Club. With the exception of the Canvasback Gun Club, none of the secondary wetlands have water rights allocations. The FWS estimates these secondary wetlands could sustain an average of 4,500 acres of wetlands habitat over the long term (U.S. Fish and Wildlife Service, 1996).

Generally, wetland plant communities in Lahontan Valley are associated with different hydrologic regimes and salinity levels found in the basin (U.S. Fish and Wildlife Service, 1996). The primary wetland communities are as follows:

Emergent Marsh (primary wetland habitat in the Lahontan Valley) -- characterized by hardstem bulrush, cattail, pondweed, alkali bulrush, spikerush, and pondweed;

Open Water -- characterized by various species of pondweed, *Chara* and widgeon grass;

Wet Meadow -- characterized by rushes, sedges, spikerush, water grass, smartweed, and saltgrass;

Alkali Mud Flats/Playas -- characterized by pickleweed, alkali weed, and widgeon grass; and

Shrub -- characterized by greasewood, quailbush, and saltgrass; or salt cedar with variable under stories.

Desert Plant Communities

Desert plant communities in the analysis area are composed of species that can tolerate moderate to highly alkaline soils and minimal precipitation. These communities can be described as greasewood, greasewood-shadscale, saltgrass, rabbitbrush, and sagebrush communities. Greasewood-shadscale is the most prevalent community type. Common plant species include Bailey greasewood, shadscale, Indian rice grass, and salt grass. There are no native trees associated with these desert shrub communities.

Agriculture

Agricultural vegetation in the Newlands Project is represented primarily by large areas of alfalfa and pasture grasses, consisting mostly of introduced grasses and weeds, and to a limited extent, native grasses and forbs. Grain crops, such as wheat, barley, and corn are also cultivated. Approximately 59,963 total acres (3,814 acres in the Truckee Division and 56,149 acres in the Carson Division) are irrigated in the Newlands Project. Agriculture downstream of Derby Dam also includes cultivation of primarily alfalfa fields and pasture and some grain crops. There are approximately 1,668 irrigated acres between Derby Dam and Pyramid Lake, the majority of

which are located within the Pyramid Lake Indian Reservation.

Noxious Weeds

Several noxious weed species are encroaching along the channels of both the Truckee and Carson river systems, with salt cedar, Russian olive and tall white top being the most abundant. Tall white top in particular is infesting large areas along the rivers at a rapid rate. Noxious weeds also infest wetlands, desert vegetative communities and agricultural areas throughout the analysis area.

3.2 WILDLIFE

Lower Truckee River Basin - Amphibians and Reptiles

The reach between Derby Diversion Dam and Pyramid Lake contains the greatest observed species diversity of amphibians in the Truckee River system due to the availability of sufficient breeding and adult habitat, including ponds for egg and larvae development, and a diversity of aquatic and emergent vegetation for cover. Bullfrogs, Pacific tree frogs, and western toads are found in this reach. Northern leopard frog, once described as one of the most common and widespread frog species in the state, was recorded at only one field site in 1992 in a shallow spring-fed pond and along the river near Dead Ox Wash.

In years with above average precipitation and runoff, high streamflows may inundate areas away from the main river channel and provide temporary breeding ponds for amphibians. In years with below average runoff, streamflows are generally lower and breeding ponds may become desiccated before larvae complete development in late spring or summer.

Seventeen additional amphibian and reptile species are thought to occur in the riparian scrub community along the lower Truckee River. The riparian forest community along this reach of the Truckee River provides breeding sites, areas of escape, and/or foraging sites for reptiles and amphibians. Western terrestrial garter snake, western fence lizard, and western aquatic garter snake are the most common. The abundant invertebrate population associated with the riparian scrub plant community provides an important food source for these animals.

Lower Truckee River Basin - Birds

Emergent wetlands, although limited along the Truckee River and tributaries, are highly productive ecosystems that provide food, cover, and nesting sites for many species of wildlife. Areas of tall emergent vegetation, such as cattails and bulrushes, provide habitat for birds such as yellow-headed, red-winged, and Brewer's blackbirds and song sparrows. Several bird species, such as marsh wren, Virginia and sora rails, and least and American bitterns, are restricted to tall emergent wetlands. Currently, most of the emergent wetlands are less than one acre in size and occur in reaches downstream from Vista. As a result, wetlands in the Truckee River system provide limited habitat for the above species, as well as limited foraging areas for swallows and

other insectivorous birds, northern harriers, short-eared owls, rails, and herons.

Populations of many wetland bird species have declined along the Truckee River. American bittern, sora, northern harrier, marsh wren, savannah sparrow, and common yellowthroat were common along the lower river in the late 1800s, but during surveys in 1992 and 1993, marsh wren, savannah sparrow, and common yellowthroat were rarely observed, and bittern, sora, and northern harrier were not observed at all. The declining trend is probably due to the loss of marsh habitat along the lower Truckee River since 1868.

Pond-like areas associated with the Truckee River provide limited resting and foraging habitat for gulls and waterfowl, such as the common merganser, wood duck, Canada goose, American coot, and mallard due to a lack of extensive aquatic or riparian vegetation. The greatest density of pond-like areas occurs downstream from Wadsworth.

Palustrine scrub-shrub wetlands support the greatest number of bird species of any habitat type in the Truckee River system. Ninety-three species of birds were observed in this habitat type in surveys conducted in 1993. This habitat is especially important for neotropical migratory birds. Species most frequently observed included American robin, black-billed magpie, Bewick's wren, brown-headed cowbird, Brewer's and red-winged blackbirds, song sparrow, warbling vireo, and yellow warbler.

Since the late 1800s, there has been a declining trend in the abundance of many bird species along the lower river that require dense riparian thickets for nesting. Human endeavors have reduced the availability of riparian thickets and adversely affected a number of species including black-chinned hummingbird, willow flycatcher, common yellowthroat, and yellow-breasted chat.

The mature tree stage of the cottonwood-willow riparian forest supports the second highest number of bird species (57) of all plant communities along the Truckee River (Morrison, 1992 and 1993). Along the lower Truckee River, the most common birds in the riparian forest are American robin, black-billed magpie, brown-headed cowbird, European starling, house wren, Bullock’s oriole, and red-winged blackbird. As in other plant communities along the lower Truckee River, reduced habitat availability has resulted in a declining trend in species that prefer cottonwood forests, particularly warbling vireo, Swainson's hawk, yellow-billed cuckoo, long-eared owl, tree swallow, and violet-green swallow.

Streamflows affect the quality of riparian forest habitat by influencing corridor width, stand size, and age of cottonwood forest. The size and width of cottonwood-willow riparian forests along the lower Truckee River have been reduced, in part, because of agricultural activities, livestock grazing, and a decline in high streamflows necessary for cottonwood regeneration and maintenance. Wildlife species density and diversity are generally greater in larger, wider stands of riparian forest. The largest stand of riparian forest along the river is 13.5 acres, but only about 7 percent of the stands are 5 acres or larger, and 50 percent are less than 1 acre. In its widest sections, the current riparian corridor is approximately 500 feet wide, but the average stand width is approximately 125 feet. In 1938, the riparian corridor reportedly ranged from 1,200 to

2,000 feet in width. Species such as yellow-billed cuckoo and northern oriole require riparian areas of 1,970 feet and 300 feet in width, respectively, to provide suitable nesting habitat (Laymon and Halterman, 1989). Yellow-billed cuckoo has not been detected along the Truckee River in recent surveys, whereas, Bullock's oriole was present (Morrison, 1992 and 1993).

Ten songbird species observed along the lower Truckee River in 1992 and 1993 are frequent or common cowbird hosts. Eight of these (willow flycatcher, chipping sparrow, common yellowthroat, spotted towhee, song sparrow, warbling vireo, yellow-breasted chat, and yellow warbler) appear to have declined in abundance or disappeared along the river since 1868.

Certain species require large-diameter trees for nesting and/or roosting. These species have been adversely impacted by the loss of older cottonwood stands along the lower river due to direct removal of trees and reduced streamflows that are inadequate for cottonwood regeneration. Along the Truckee River, sapsuckers, downy woodpeckers, and northern flickers require large cottonwoods in which they excavate their own nest cavity (primary cavity nesters). These species are important because their nest sites are subsequently used by secondary cavity nesters (occupy cavities excavated by another species). Along the lower Truckee River, native secondary cavity nesters include American kestrel, common merganser, house wren, tree swallow, violet-green swallow, and wood duck. Two introduced secondary cavity nesting species (house sparrow and European starling), which compete with native cavity nesters for nest sites, are common along the lower river.

Several bird species have successfully adapted to the presence of human activities in the basin. Mourning doves, common ravens, black-billed magpies, and American crows are frequently observed foraging in and near agricultural fields although they nest in nearby trees and upland areas. House sparrows, pigeons, and European starlings are three introduced species found in residential areas where trees and shrubs are common. Other species, introduced for recreational hunting purposes are now found inhabiting agricultural lands associated with riparian habitat as well as urban areas. These species are California quail, ring-necked pheasant, wild turkey, and chukar.

Of the 51 water bird species that occur at Pyramid Lake, 29 species (excluding shorebirds) potentially breed at or near the lake; 10 of these species are winter visitors, and 12 are transients during fall and spring migration. Waterfowl use at Pyramid Lake is greatest during the fall and winter. Pyramid Lake also becomes important waterfowl habitat in drought years when other nearby wetlands are dry. The northern end of Pyramid Lake, which provides shallow feeding areas and receives less disturbance from recreationists, and the southern end near the mouth of the Truckee River, are the most important feeding areas for waterfowl.

Lower Truckee River Basin - Mammals

Wetland-associated mammals known or expected to occur along the Truckee River and tributaries include muskrat, mink, water shrew, beaver, and river otter. Other mammals, including shrews, insectivorous bats, raccoons, and skunks, may forage on the abundant invertebrates associated with emergent wetlands.

Of the six major mammal species in this portion of the analysis area that require freshwater streams and/or riparian vegetation, Sierra Nevada mountain beaver and river otter are primarily associated with palustrine scrub-shrub wetlands. Historically, river otters occurred throughout the Truckee River system; however, they are currently believed to be present only along the Truckee River near Clark and Wadsworth. Deer also use scrub-shrub wetlands along the Truckee River for cover, forage, and fawning. A number of small, scattered resident mule deer herds occur from Reno to Pyramid Lake.

The cottonwood forest along the lower and middle Truckee River provides habitat for mammals that otherwise would not be expected to occur at this elevation, including the mountain cottontail, western harvest mouse, long-tailed vole, western jumping mouse, bushy-tailed woodrat, porcupine, raccoon, long-tailed weasel, and skunk.

Cavities in cottonwood snags (dead trees) serve as den or resting sites for mammals, such as bats, spotted skunks, raccoons, martens, and weasels. Rodents, rabbits, foxes, raccoons, weasels, skunks, and otters use downed logs as hiding, feeding, and/or nesting areas. The lower elevation riparian forests along the Truckee River are the only sites that provide snag and log habitats. The riparian zone also provides an avenue for wildlife to disperse from one habitat or geographic area to another, and for seasonal movements between high and low elevation areas.

Lower Carson River Basin - Amphibians and Reptiles

Several species of reptiles live in the lower Carson River basin portion of the analysis area and are generally found in the upland vegetative communities. Lizards known to occupy upland vegetation communities include: desert horned lizard, Great Basin collared lizard, long-nosed leopard lizard, zebra-tailed lizard, side-blotched lizard, yellow-backed spiny lizard, Great Basin fence lizard, northern sagebrush lizard, and Great Basin whiptail lizard. Snakes include the Great Basin rattlesnake, Western coachwhip, Great Basin gopher snake, California kingsnake, Western long-nosed snake, wandering garter snake, night snake, California kingsnake, Western terrestrial garter snake, and Western aquatic garter snake.

Northern leopard frogs occur in wetland areas, river channels, and irrigation canals although their numbers have declined since the 1970s (U.S. Fish and Wildlife Service, 1996). Bullfrogs were introduced into Lahontan Valley in the late 1800s and, despite prolonged drought, populations appear to have remained stable in the valley along riparian areas and irrigation canals.

Lower Carson River Basin - Birds

The Lahontan Valley wetlands support a wide diversity of migratory and wetland-dependent birds. In addition, the riparian-scrub and cottonwood-willow riparian forest communities along the Carson River support numerous other bird species.

The wetlands provide one of the most important resting and feeding sites along the entire Pacific Flyway because of the variety of available habitats, ranging from wetlands and riparian corridors to agricultural lands and desert shrub communities. When sufficient water is available, Lahontan Valley wetlands provide habitat for up to 70 percent of Nevada's waterfowl population. Up to 175,000 ducks, geese, and swans migrate through the valley annually, and in peak years as many as 475,000 waterfowl have been recorded. In addition, the numbers of shorebirds using the wetlands can be as high as 250,000 individuals during migration periods. The prime migratory periods for birds moving through the area are generally between August and November, and February and May of each year.

Most waterfowl use in the area occurs in the wetlands of Stillwater National Wildlife Refuge and Carson Lake. Data from duck populations at both locations indicate that reproductive success of these species has declined over the last 25 years due primarily to a reduction in wetlands acres (U.S. Fish and Wildlife Service, 1996). The number of breeding ducks declined from 3,525 pairs in the early 1970s to 1,365 pairs in 1989. During that same period primary wetland habitat averaged 27,000 acres in the 1970s but as a consequence of a multi-year drought, had declined to approximately 7,600 acres by 1989.

In contrast, wintering populations of Canada geese doubled from 2,100 to 5,100 during the period 1971 - 1991 (U.S. Fish and Wildlife Service, 1996). Scientists attribute the increase to the relative abundance of agricultural fields in Lahontan Valley that provided a source of forage. Similarly, spring migratory populations of snow geese increased from an average of 11,100 birds between 1970 - 1975 to an estimated 30,000 birds in 1994 (U.S. Fish and Wildlife Service, 1996).

Substantial numbers of colony nesting and other marsh birds migrate through and nest in the area. Colony nesting birds include gulls, terns, egrets, herons, cormorants, pelicans, and white-face ibis. Marsh birds include grebes, rails, and bitterns. As was the case with waterfowl species, colony nesting and marsh species have experienced a decline in population numbers in recent years as a result of a reduction of available habitat due to a combination of drought-related effects and the influence of man's activities.

There are both upland-dependent and marsh-dependent passerine species in the Lahontan Valley. Marsh-dependent species include long billed marsh wrens, common yellowthroats, savannah sparrows, and song sparrows. Upland-dependent species include house wrens, yellow warblers, Bewick's wren, black-headed grosbeak, and Northern orioles.

Many of the cottonwood trees in riparian habitats along the Carson and Truckee Rivers as well as those along Lahontan Reservoir have died due to drought and other factors. Loss of these trees adversely effect cavity-nesting species in the area including sapsuckers, northern flickers, and six species of woodpeckers known to exist in the area. In addition, loss of these trees effects secondary cavity-nesting species such as American kestrel, screech owl, common merganser, house wren, tree swallow, wood duck, and western bluebird (U.S. Fish and Wildlife Service, 1996).

The current overall diversity of passerine birds in the area is greater than that present prior to Euro-American immigration into the valley. While the diversion of water to agricultural lands has had a negative impact on some passerine species, the introduction of agricultural plant communities has increased food resources for others. In addition, many introduced species have adapted very well to urban conditions and continue to thrive.

Many raptor species are also present in Lahontan Valley. Some of the water-dependent raptors include bald eagle, northern harrier, peregrine falcon, osprey and short-eared owl. Other raptors that are not necessarily water-dependent but are frequently observed in or near wetlands where prey are more abundant include golden eagle, prairie falcon, red-tailed hawk, American kestrel, Swainson's hawk, rough legged hawk, turkey vulture, great horned owl, and common barn owl.

Four bird species introduced to the area for recreational hunting purposes are the California quail, ring-necked pheasant, wild turkey, and chukar. Quail are highly adaptable inhabiting agricultural lands, associated riparian habitat, and urban areas. Pheasants are dependent on agricultural land. Turkeys have succeeded in establishing a viable population in the agricultural and riverine areas of the valley. Chukar are found primarily in native desert plant communities in rocky uplands.

Overall diversity and abundance of birds has declined in Lahontan Valley. Changes in river flow regimes coupled with growth and development in the area have combined to eliminate desirable bird habitat throughout the area. Elimination of dense riparian thickets along the Carson River has resulted in the decline of species like the black-chinned humming bird, willow flycatcher, common yellowthroat, and yellow-breasted chat. In addition, surveys have shown that wetland-dependent species have been adversely affected by loss of desirable wetland habitat. At least two species of ducks, three species of shorebirds, and seven species of colony nesting or marsh birds known from Lahontan Valley have experienced declines in population or reproductive success since 1970 (U.S. Fish and Wildlife Service, 1996).

Lower Carson River Basin - Mammals

Mammals are found throughout the lower Carson River basin area and a total of 49 species of mammals have been recorded by the U. S. Fish and Wildlife Service (1996). Upland mammals, found in upland desert plant communities, are the most diverse and widely distributed group. This group, ranging in size from pocket mice to mule deer, are composed primarily of rodents. Common rodents found in lower elevation greasewood communities include white-tailed antelope ground squirrels, pale kangaroo mice and Great Basin kangaroo rats. Desert rodents such as Merriam's kangaroo rats can be found in alkali flats.

Mule deer populations in the area have increased to near record levels in Lahontan Valley and black-tailed jackrabbits are common throughout the community. The most common predator in the Lahontan Valley is the coyote. Kit foxes are common in less developed areas. Striped skunks are common in agricultural areas, but long-tailed weasels and racoons that had been

fairly common in the 1950s occur only rarely now.

Of the wetland-dependent species, mink have vanished although they were once common in the area. Beaver and muskrat populations occur in the lower Carson River and Newlands Project canals and drains; the muskrat population is beginning to increase after being reduced during the drought period in the late 1980s and early 1990s.

Other species known to occur along the river corridor, canals and drains include bats, racoons, , western harvest mouse, long-tailed vole, porcupine, and skunks.

3.3 FISH

Carson River

Native fish species in the Carson River include Lahontan redside shiner, speckled dace, Tahoe sucker, and mountain sucker. Beginning in 1994, the Nevada Division of Wildlife (NDOW) re-initiated a cutthroat trout stocking program in the Carson River downstream from Lahontan Dam.

Habitat quality in the section of the Carson river downstream from Lahontan Dam is described as poor and there are few areas where the river bottom is not heavily silted (U.S. Fish and Wildlife Service, 1996). Macro invertebrate population abundance and overall species diversity in the river downstream from Lahontan Dam is low, due to wide fluctuations in stream flow throughout the year. In the past, few stocked game fish have survived through the year and no natural reproduction has been reported.

Lahontan Valley Warm Water Fishery

In the past, regulating reservoirs and deeper wetlands in the Newlands Project area have supported a warm water sport-fishery. Fifteen warm water fish species have been reported to occur in Lahontan Valley. Prior to elimination of winter power releases in 1967, Stillwater Marsh was reported to support one of the largest populations of largemouth bass, crappie, catfish, and sunfish in Nevada (U.S. Fish and Wildlife Service, 1996). Regulating reservoirs and wetlands, particularly Canvasback Gun Club, Stillwater National Wildlife Refuge, and Indian Lakes, continued to support good fishing opportunities until drought conditions in the early 1990s significantly reduced or eliminated available water resources. NDOW reports that as a

consequence of the drought and requirements for greater Newlands Project water distribution efficiency the Lahontan Valley sport-fishery has been diminished to the point that, except for Lahontan Reservoir, it is nearly nonexistent (U.S. Fish and Wildlife Service, 1996).

Non-game fish species are still found in Lahontan Valley wetlands, although habitat availability is dependent on the volume of inflows. Non-game species found in the analysis area include: carp, Sacramento blackfish, tui-chub, Lahontan redside shiners, speckled dace, Lahontan

mountain suckers, Tahoe suckers, fathead minnows, and mosquito fish.

Lahontan Reservoir

Game fish species in Lahontan Reservoir include white bass, channel catfish, white catfish, walleye, a white bass/striped bass hybrid, white crappie, yellow perch, and largemouth bass. In 1993, Sacramento blackfish and carp made up 98 percent of the fish population in the reservoir (Nevada Division of Wildlife, 1993). As is the case with Lahontan Valley wetlands, fish habitat in Lahontan Reservoir is dependent on the volume of inflow to the reservoir. During the early 1990s when drought conditions prevailed, a combination of low water levels, high water temperatures, and extensive algae growth resulted in low oxygen concentrations in the reservoir which negatively effect the fish populations. Conditions in the reservoir improved during the previous five years as the volume of Carson River inflow to the reservoir increased due to above average precipitation and runoff.

In April 1986, the Nevada Division of Environmental Protection and Consumer Health Services issued a public health advisory recommending that consumption of fish taken from Lahontan Reservoir be limited due to high levels of methyl mercury in the lake sediment. In September 1997, the Nevada State Division of Consumer Health Services issued a warning against consuming any fish caught in the Carson River downstream from Dayton due to mercury contamination. Much of the mercury in the lower Carson River Basin was used in the recovery of silver and gold in the 1850s during the Comstock mining era and then dumped into the Carson River.

Truckee River

Native and non-native fish species occur in all of the streams, lakes, and reservoirs of the Truckee River system. Nine native fish species are known to occur in the Truckee River system. Lahontan redside shiner, speckled dace, Tahoe sucker, and tui chub are the most widespread native fish species. Mountain whitefish and Paiute sculpin are common in some areas. Cui-ui and Lahontan cutthroat trout (LCT) are federally listed as endangered and threatened, respectively, and the mountain sucker is a California Species of Special Concern. These species are discussed further under "Endangered, Threatened, and Sensitive Species."

Some species, such as Lahontan redside shiner, speckled dace, and Tahoe sucker, have broad tolerance to environmental conditions and thus are generally more widespread and abundant in the Truckee River basin. Other species, such as mountain whitefish and mountain sucker, have more restricted environmental limits.

All native species, except mountain whitefish, spawn in spring and early summer when streamflows are usually high, and lakes and reservoirs are filling or full. Mountain whitefish spawn in October and November when streamflows are usually low, and lakes and reservoirs are at less than capacity because of summer releases. Spawning and fry rearing habitat for many species in the Truckee River is degraded and many of the complex pool habitats critical to

juvenile survival have been lost.

A variety of non-native fish species have been introduced extensively throughout the Truckee River basin. Eighteen non-native fish species are found in lakes and reservoirs in the system. All the non-native salmonids (trout and salmon), except rainbow trout, spawn in the fall, and all but lake trout spawn in the Truckee River or its tributaries. Habitat for spawning and rearing of salmonid adults is very restricted during low flow conditions. The other non-native fish spawn in spring or early summer. They generally spawn in the lakes and reservoirs, although some can spawn in tributaries which have large pools of warm, slow-moving water.

Pyramid Lake

Common native fish species found in Pyramid Lake are Lahontan redside shiner, speckled dace, Tahoe sucker, and tui chub; tui chub is the most abundant species. Endangered cui-ui and threatened LCT are also found in the lake; these two species are discussed further under "Endangered, Threatened, and Sensitive Species."

The only non-native fish species resident in Pyramid Lake is Sacramento perch, a lake spawning species. Catfish, carp, and rainbow trout are flushed into the lake during periods of high inflow, but they generally move out of the saline lake waters into the river downstream from Marble Bluff Dam to live in the fresher water.

Speckled dace, Lahontan redside shiner, and tui chub can spawn in the lake and in the lower Truckee River downstream from the Marble Bluff Dam when access flows are available. Cui-ui and LCT are obligatory stream spawning species, usually during May and June, depending on streamflow and water temperatures. Cui-ui spawn in the lower Truckee River between Wadsworth and Pyramid Lake.

Pyramid Lake elevation is important for spawning access to the Truckee River. Marble Bluff Fish Facility and Pyramid Lake Fishway were constructed to provide such access for cui-ui and LCT when the delta is not passable. Access up the fishway is generally possible when lake elevation exceeds 3,784 feet.

3.4 ENDANGERED, THREATENED, CANDIDATE AND SENSITIVE SPECIES

Under the Endangered Species Act an "endangered species" is defined as a species in danger of extinction throughout all or a significant portion of its range. A "threatened species" is defined as a species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. A “candidate species” is defined as a species being considered for possible addition to the List of Endangered and Threatened Species.

Two federally listed endangered species (American peregrine falcon and cui-ui), two threatened

species (bald eagle and Lahontan cutthroat trout) and one candidate species (mountain plover) occur in the analysis area for this EA.

American peregrine falcon (Endangered)

Peregrine falcons have been sighted regularly at both Carson Lake and Stillwater National Wildlife Refuge since 1895, with the most consistent sightings occurring at Carson Lake. Peregrines are normally observed from February through November of each year. The peregrine falcon nests and roosts on protected ledges of high cliffs, usually adjacent to lakes, rivers or marshes with large populations of birds. There are historic eyries at Pyramid Lake.

Cui-ui (Endangered)

Cui-ui is a large, omnivorous sucker found only in Pyramid Lake. At the turn of the century cui-ui also inhabited Winnemucca Lake, a basin adjacent to Pyramid Lake that is also fed by the Truckee River. Beginning in the 20th century, changes in river discharge patterns due to construction of upstream storage reservoirs and increased water diversions for municipal and industrial and agricultural uses (particularly for the Newlands Project) reduced Truckee River inflow to Pyramid and Winnemucca Lakes. By the mid-1930s, Winnemucca Lake had evaporated and by 1967 Pyramid Lake was nearly 80 feet lower than in 1900. This caused a dramatic decline in the cui-ui population. As a consequence, the species was classified as endangered on March 11, 1967.

Cui-ui was once a major food source for the Pyramid Lake Paiute Tribe. Due to its endangered species status, the Tribe has enforced a moratorium on fishing for cui-ui for nearly three decades. Preliminary results of recent studies indicate that the number of cui-ui adults has increased substantially in the last 10 years, from approximately 200,000 in the early 1980s to over 1 million in 1992. However, mortality due to predation, stranding on the delta, stress, and other unknown factors increased dramatically during the 1993 and 1994 spawning runs; these two water years had well below average inflow to Pyramid Lake. As a result, the adult population was reduced to approximately 600,000 fish in 1993. The population rebounded to nearly 1.1 million in 1994 with the recruitment of new year classes. Most of these fish were produced by several spawning runs of a few thousand adults in the early 1980s during a series of high runoff years.

The species has likely benefited from FWS management efforts, dedication of Stampede Reservoir storage to cui-ui and LCT, and reduced diversions to the Newlands Project over the last two decades. Pyramid Lake is 34 feet higher than it was in 1967 when the cui-ui was listed; the last time the lake was this high was in 1944. The majority of this rise (24 feet) occurred between 1981 and 1999 and is attributed to above average precipitation during several successive winters and subsequently above average run-off into the Truckee River system. Additional increases are attributed to less diversions at Derby Dam for the Newlands Project and water conservation programs for the Newlands Project and the Truckee Meadows.

Lahontan cutthroat trout (Threatened)

LCT is a federally listed threatened species. It is the native salmonid historically found throughout the Lahontan Basin of northern Nevada, eastern California, and southern Oregon. It was estimated that about 360 miles of stream habitat and 284,000 acres of lake habitat suitable for LCT existed within the Truckee River basin before settlement of the area by Euro-American pioneers. The largest populations of LCT occurred in Pyramid Lake and Lake Tahoe, where the fish was a major food source for local Indian Tribes. Two distinct Pyramid Lake LCT spawning migrations once occurred in the Truckee River, spring run "Tommies" and fall run "redfish" (La Rivers, 1962). Populations also occurred in Fallen Leaf, Cascade, Donner, Independence, and Winnemucca lakes (Gerstung, 1986).

Lahontan cutthroat trout currently occur in 155 small tributary streams with approximately 482 miles of occupied habitat throughout its range. In addition, LCT are found in six lakes and reservoirs, including the small, indigenous populations in Independence Lake and Independence Creek in the Truckee River basin and Summit Lake in the Black Rock basin. The Independence Lake and Independence Creek LCT population are considered important for recovery of LCT.

The Lake Tahoe LCT fishery disappeared in 1939 as a result of the combined effects of over-fishing, exotic fish introductions, and damage to spawning habitat. By 1944, the original Pyramid Lake LCT population was extirpated by a combination of Truckee River diversions at Derby Diversion Dam for the Newlands Project, pollution, commercial harvest, and exotic fish introductions into the main Truckee River system. FWS classified LCT as endangered in 1970 and subsequently reclassified it as threatened in 1975 to facilitate management and allow regulated fishing.

Bald Eagle (Threatened)

As many as 70 bald eagles winter at Lahontan Valley wetlands and are generally observed between November and March near the wetlands and reservoirs of Lahontan Valley. Eagles are known to winter along both the Truckee and Carson Rivers. Roosting habitat for eagles in both river basins, particularly cottonwood trees, has been adversely affected by continuously declining cottonwood populations.

A pair of bald eagles has established a nest at Lahontan Reservoir for the past four years beginning in 1997 (pers. comm. Johnson, 2000). These eagles are only the second known nesting attempt in Nevada since 1866 and the first at Lahontan Reservoir. Historically Bald eagles nested at Pyramid Lake and were last known to nest at the lake in 1866.

Mountain plover (Candidate)

Mountain plover is a shorebird that is an occasional migrant in the Lahontan Valley. This bird occurs in relatively barren areas in alkali flats, pastures, agricultural fields and other open arid habitat.

Sensitive Species

There are a number of Federal and State sensitive species occurring in the analysis area that could be affected by the project. These species are listed in Table 3.1. Distribution listed in the table is for the distribution of the species within the analysis area only.

Table 3.1 Federal and State Sensitive Species Occurring or Having the Potential to Occur in the Analysis Area that could be affected by the A.B. 380 Project

Category	Species	Habitat	Distribution
FISH			
	Lahontan tui chub	Lakes and streams	Lower Carson River, Diagonal Drain, Little Soda Lake, Stillwater Point Reservoir; Pyramid Lake; Truckee River
	Mountain sucker	Small, clear mountain streams with rubble, sand or boulder bottoms; occasionally lakes or reservoirs	Truckee River, Carson River Drainage
BIRDS			
	Swainson's hawk	Nests in cottonwoods in agricultural valleys	Occasional sightings during breeding season; lower Truckee River, Lahontan Valley, and Stillwater Marsh
	Western yellow-billed cuckoo	Nests in large cottonwood-willow stands	Historic records on lower Truckee River isolated and sporadic records on Carson River above Lahontan Reservoir and to the west of the reservoir; possibly in the Lahontan Valley
BIRDS			
	Willow flycatcher	Nests in riparian areas with broad, flat meadows containing dense willows	Historic records along lower Truckee River
	American white pelican	Nests on islands in freshwater lakes; forages in rivers, lakes, and marshes	Anaho Island supports one of the largest breeding colonies in the United States; forage in Pyramid Lake, Humboldt Sink, Honey Lake, Stillwater Marsh, Carson Lake, and Truckee River; winter on California coast and Central Valley

Category	Species	Habitat	Distribution
	American Bittern	Freshwater marshes containing tall, emergent vegetation	Breeding species throughout Great Basin; historic sightings along lower Truckee River
	Western least bittern	Prefer freshwater marshes with cattails	May nest in the study area, particularly in Lahontan Valley
	White-faced ibis	Prefers to nest in emergent vegetation marshes or on freshwater lake shores	Lahontan Valley supports one of the largest colonies in North America; occasional sightings on lower Truckee River
	Western snowy plover	Open habitats devoid of thick vegetation along alkali flats, dry lake beds, and shores of salt ponds	Summer resident in Great Basin, may occasionally occur at Pyramid Lake, nests in Lahontan Valley though numbers have decreased dramatically since 1980
	Long-billed curlew	Nests in emergent wetlands, meadows, upland areas and pastures	Summer resident in Nevada; occasional sightings on lower Truckee River; nests in Lahontan Valley in
	California gull	Nests colonially on islands; forages in a variety of habitats	Nests colonially on Anaho Island and on islands in Lahontan Reservoir; winters on west coast
BIRDS			
	Black tern	Prefers freshwater emergent marshes, sloughs and wet meadows	Summer resident in northern and western Nevada; uncommon nester in Lahontan Valley
	Northern harrier	Uses wetlands and agricultural areas	Year-round resident in Nevada; lower Truckee River and Lahontan Valley
	Sharp-shinned	Uses dense ponderosa	Uncommon summer resident in mountain ranges;

Category	Species	Habitat	Distribution
	hawk	pine, mixed conifer, and riparian forests	winter resident in valleys; some nesting in Lahontan Valley
	Cooper's Hawk	Nests in riparian deciduous forests and conifers; elevation 4,500 to 10,000 feet	Summer resident in mountains; winter resident in valleys; some nesting in Lahontan Valley
	Merlin	Wetlands, riparian, and agricultural habitats	Migrant or winter visitor in Nevada
	Trumpeter swan	Large, shallow marshes and lakes	Infrequent winter visitor to Stillwater Marsh
	Osprey	Nests in snags near lakes or rivers with abundant fish	Nests at Lake Tahoe and Stampede Reservoir; formerly nested at Lahontan and S-Line Reservoirs; observed throughout Nevada during spring and fall migrations.
	Loggerhead shrike	Upland greasewood and agricultural	Lahontan Valley
	Ferruginous hawk	Semi-arid open habitat with elevated nesting sites	Winter visitor to Lake Tahoe region; uncommon winter resident along the lower Truckee River and Lahontan Valley.
BIRDS	Black-shouldered kite	Open country around marshes, meadows, and cultivated fields with scattered clumps of trees	Occasional sightings during spring n winter along lower Truckee River and at Pyramid Lake.
	Short-eared owl	Nests in meadows and wetlands	Year-round resident in Nevada
	Long-eared owl	Nests in riparian and coniferous forests	Year-round resident in Nevada

Category	Species	Habitat	Distribution
	Vaux's swift	Forested regions and river valleys	Breeding habitat along Sierra Nevada, rare occurrence along lower Truckee River.
	Rufous hummingbird	Mountain meadows, desert scrub, coniferous forests and riparian coniferous woodlands	Resident in the Sierra Nevada, common migrant in Great Basin, occasional sightings in study area.
	Lewis' woodpecker	Nests in riparian and coniferous forests, especially cottonwood and ponderosa pine	Summer resident in Nevada
	Purple martin	Nests colonially in open country near water	Historic records along lower Truckee River; occurs in Lake Tahoe basin during migration.
	Western bluebird	Nests in snags in open forests at low elevations	Occasional records along Truckee River
	Olive-sided flycatcher	Coniferous forests containing tall standing dead trees	Sierra Nevada; occasional sightings along the lower Truckee River.
	Yellow warbler	Nests in riparian thickets and riparian forest with dense understories	Along Truckee River and tributaries.
	Yellow-breasted chat	Nests in dense riparian thickest in valleys	Historically common along lower Truckee River, but now rare.
	Bewick's wren	Dense, bushy habitats of alder, willow, and cottonwood	Throughout study area along riparian zones.
MAMMALS	Spotted bat	Arid deserts to high mountains; roosts primarily in crevices in cliffs near water; may forage in riparian areas	Throughout most western states, including Nevada
	Townsend's big-eared bat	Roosts in caves and mines in a variety of habitats, may forage in riparian areas	Historic records near Pyramid Lake, Stillwater, and Fallon

Category	Species	Habitat	Distribution
	Yuma myotis	Forages along riparian areas containing willows and cottonwoods	Lower Truckee River
	Long-eared myotis	May occur in semi-arid areas	Throughout the study area
	Pallid bat	Primarily open lowland habitats below 6,600 feet	Nevada portion of the study area
INVERTEBRATES	Nevada Viceroy	riparian; willow-dependent	Colonies near Fallon and Fernley
	California floater	Shallow areas less than 6.5 feet deep in lakes and rivers; usually slow moving water; adults in sand, mud, or stream bottom	Historic record in Truckee River late 1800s
REPTILES	Northwestern pond turtle	Inhabits permanent and intermittent aquatic habitat; rivers, ponds, streams, lakes marshes, irrigation ditches, and wetlands	Carson River drainage; Suitable habitat has been identified in three areas along the Truckee River
AMPHIBIANS	Northern leopard frog	Brackish and freshwater marshes with dense vegetation; desert lowlands to high mountain meadows	Lower Truckee River; 8.0 to 12.0 miles upstream from Pyramid Lake

3.5 NEWLANDS PROJECT OPERATIONS AND INFRASTRUCTURE

With passage of the Reclamation Act of 1902, Reclamation began construction of Newlands Project facilities. Derby Diversion Dam was the first structure in the United States to be built under the Reclamation Act. Other Newlands Project facilities include Tahoe Dam, Lahontan Dam and Reservoir, Carson River Diversion Dam, various hydropower project facilities, the Truckee Canal and the lateral and drainage canal system. Water supply for the Newlands Project is obtained from the Carson and Truckee Rivers with the Carson River being the primary water source for the Newlands Project. Water use on the Carson River is governed by the Alpine Decree.

Truckee River water is stored in the upper watershed in Lake Tahoe, as well as in Prosser, Stampede, and Boca Reservoirs. Storage is also available in two privately owned reservoirs, Donner and Independence lakes. The portion of Truckee River water to which the Newlands Project is entitled is diverted into the Truckee Canal. The water is then used for irrigation in the Truckee Division and delivery to Lahontan Reservoir. Water stored in Lahontan Reservoir is released to serve Carson Division water rights.

Newlands Project Operating Criteria and Procedures (OCAP)

The Newlands Project OCAP governs Newlands Project operations. In 1997, the Department of the Interior issued a final rule adjusting the OCAP to more accurately reflect the number of irrigated acres in the Newlands Project. The overall effect of the adjusted OCAP will be to reduce the volume of water diverted from the Truckee River to serve agricultural rights in the Carson Division. The current OCAP impose constraints on the timing and volume of water that can be diverted from the Truckee River to Lahontan Reservoir, allowing the remainder of the

Truckee River flow to go to Pyramid Lake. With the adjusted OCAP in place, it is estimated that an average of approximately 91,400 acre-feet of water would be diverted from the Truckee River annually with 50,500 acre-feet of that volume delivered to Lahontan Reservoir for use by the Carson Division (U.S. Department of the Interior, 1997).

Truckee River Operations

Public Law 101-618 directs the development and execution of a Truckee River Operating Agreement (TROA). If approved, TROA will be a negotiated agreement involving the United States, the States of California and Nevada, the Tribe, and Sierra Pacific Power Company as mandatory signatories. Fourteen other entities have participated in lengthy negotiations including the cities of Reno and Sparks, and the Town of Fernley. The general provisions of TROA will likely include: coordinating reservoir storage and releases; exchange of stored water; efficient use of water supplies and storage space; improved water accounting; implementation of

the Interstate Allocation; and implementation of the Preliminary Settlement Agreement. As of June, 2000, TROA negotiations have not been completed.

Newlands Project Irrigated Acreage Base

Approximately 59,963 total acres (3,814 acres in the Truckee Division and 56,149 acres in the Carson Division) are currently irrigated in the Newlands Project. The total amount of irrigated acres fluctuates from year to year. The water duty associated with the irrigated acres varies by whether the acreage is classified as bench or bottom lands. Bench lands are entitled to 4.5 acre-feet of water per acre annually and bottom lands are entitled to 3.5 acre-feet per acre.

Wetland Deliveries

Three sources supply water to the primary wetlands in the Lahontan Valley. These consist of irrigation deliveries, drainwater and spills. Irrigation deliveries serve water rights acquired for the wetlands. Incidental drainwater inflows include irrigation drainwater, return flows (tailwater), subsurface drainage and irrigation canal seepage. Spills refer to water released from Lahontan Reservoir (accidental, operational or precautionary releases) that are not for the purpose of meeting irrigation demand. Spills are an intermittent and unreliable source of water for wetland areas in the Lahontan Valley and are difficult to capture for wetlands areas due to the limitations of existing canal and drain systems.

Newlands Project Efficiency

Newlands Project efficiency for the Carson Division is defined as the ratio of valid headgate deliveries to Lahontan Reservoir releases, excluding spills, plus diversions to the Rock Dam Ditch. The Newlands Project Efficiency Study (U.S. Department of the Interior, 1994) examined alternatives to improving Project efficiency using structural improvements and operational changes. The current Operating Criteria and Procedures (OCAP) for the Newlands Project set an annual efficiency target for project deliveries based on the irrigated acreage. TCID is responsible for operating the project to meet the efficiency target. If the efficiency target is exceeded, a water credit is awarded; if project efficiency falls short of the target, a water debit is incurred which must be made up in subsequent years. As required, TCID is responsible for developing a water conservation plan which should help the Newlands Project meet the required annual efficiency target.

In response to the Reclamation Reform Act of 1984, in order to promote water conservation with Reclamation's customers, Reclamation initiated the Water Conservation Field Services Program. This program is designed to provide incentives to water districts to explore and implement water conservation measures. Areas of emphasis in the program include technical planning assistance, education, demonstration, and implementation. This program is used in part to assist TCID in the above mentioned areas in water conservation.

In addition to the above program, Reclamation also established a field office in Fallon, Nevada

in 1988. Part of the purpose of this office is to work directly with TCID personnel to develop and implement water conservation measures.

Lahontan Reservoir Operations

Lahontan Reservoir inflow consists primarily of Carson River runoff which varies greatly depending upon the amount of annual precipitation, primarily snowpack amounts in the eastern Sierra Nevada. Truckee River diversions through the Truckee Canal also contribute to inflows to Lahontan Reservoir, and are higher during drought conditions when the inflow from the Carson River is limited. Inflows to the reservoir are highest during April, May and June and lowest during August, September and October.

Lahontan Reservoir outflow is divided into three categories: releases to serve the Carson Division water users; reservoir losses due to seepage and evaporation; and spills. Outflow is highest in June and gradually decreases through November when the irrigation season ends. Water released from Lahontan Reservoir is diverted into Rock Dam Ditch and the T and V Canals which carry the water into an extensive system of irrigation canals and laterals. Once in the distribution system the water is regulated by numerous small facilities.

Lahontan Reservoir storage varies greatly throughout the year. In general, the highest water levels occur between March and June in response to spring runoff and Truckee River diversions. In the ensuing months water levels decline through evaporation and as water is released to satisfy downstream irrigation demands.

3.6 WATER RESOURCES

Winter snowfall and spring runoff in the eastern Sierra Nevada is the major source of water feeding the Carson and Truckee Rivers, both of which flow eastward from the mountains toward the analysis area. Carson River flows into Lahontan Valley are directly correlated to the amount of spring runoff from the Sierra Nevada while Truckee River flows are managed through storage and releases from six reservoirs in the upper watershed.

Lower Truckee River Basin - Surface Water

Surface Water Supply

Stream gauge records for the Truckee River upstream of Derby Dam near Tracy, Nevada, show an average annual flow of 557,500 acre-feet/year during the period 1972 - 1994 (U.S. Geological Survey, 1994). Computer modeling of the “No Action” alternative for the 1997 Adjusted Newlands Project OCAP EA calculated an average annual flow of approximately 562,500 acre-feet/year for the 95-year period of record. Newlands Project diversions from the Truckee River were calculated to average 113,600 acre-feet/year, with 72,100 acre-feet of this amount delivered to Lahontan Reservoir.

Surface Water Quality

As the Truckee river flows from Lake Tahoe to Pyramid Lake, pollutants, including nutrients and total dissolved solids (TDS) resulting form natural erosion of the watershed and from man-induced processes concentrate and degrade the water quality. Additionally, water is diverted for agricultural and M&I uses and is returned to the river in diminished quantity and quality. Watershed erosion, agricultural run-off and wastewater treatment plant return flows are the primary causes of degraded water quality in the Truckee River. Segments of the Truckee River have been or continue to be in violation of water quality standards for temperature, phosphorus, nitrogen, total dissolved solids, fecal coliform, and pH. The sources of such pollution include a combination of nonpoint sources (e.g., urban runoff and agricultural return flows), and point sources (e.g. treated effluent from the Reno/Sparks wastewater treatment plant). Their effects on water quality in the river are intensified by reduced river flows due to diversions and destruction of riparian habitat through channelization and grazing. Increased concentrations of total dissolved solids, nitrogen, and phosphorus stimulate algae production Andean result in lower dissolved oxygen in the Truckee River. These conditions are exacerbated by low flow conditions due primarily to drought and diversions.

Reduced inflows and increased pollutant loading from logging, agriculture, and urbanization have adversely affected the water quality of Pyramid lake. As the lake level has dropped due to reduced inflows, salinity has increased. Nutrient loading from upstream sources may be responsible for the huge blooms of nitrogen-fixing blue-green algae, *Nodularia,* during summer months. When large quantities of the algae die and decompose, dissolved oxygen concentration in lake waters declines.

The decline in lake level also led to erosion and headcutting in the Truckee River upstream of Pyramid Lake. This in turn resulted in the erosion and dissection of a pre-existing delta complex between Pyramid Lake and Nixon. In recent years, substantial amounts of locally eroded sediment were added to the normal sediment load of the Truckee River. Deposition of this combined sediment load formed a delta at the mouth of the Truckee River. This local erosion was greatly reduced after construction of Marble Bluff Dam in 1975, which controlled upstream headcutting.

Lower Truckee River Basin - Groundwater

Groundwater Supply

Groundwater recharge in the Fernley area is affected by: (1) infiltration of precipitation; (2) infiltration from streams and canals; (3) underflow from the nearby highlands and; (4) infiltration of irrigation water (Sinclair and Loeltz, 1963). The major sources of groundwater recharge for the Fernley basin are agricultural irrigation, Truckee Canal seepage losses, and irrigation canal losses (Van Denburgh and Arteaga, 1979). Seepage from the Truckee Canal between Derby Dam and Lahontan Reservoir has been estimated at 31,000 to 35,000 acre-feet annually (Sinclair and Loeltz, 1963; U.S. Department of the Interior, 1994). Only a portion of

the water used for irrigation is available for infiltration to the groundwater. While the volume of water applied for irrigation that actually recharges the groundwater reservoir is not known, available data indicate the average annual recharge could be several thousand acre-feet (Sinclair and Loeltz, 1963).

In the lower Truckee River basin, near Wadsworth, local aquifers are recharged primarily from the lower Truckee River with some inflow from the Fernley Basin (Sinclair and Loeitz, 1963). Water from lower basin aquifers discharges back into the Truckee River downstream toward Pyramid Lake (Van Denburgh and Arteaga, 1979). Water from wells drilled into lower basin aquifers is of good quality and provides an adequate supply to meet existing demand (U.S. Fish and Wildlife Service, 1996).

Groundwater Quality

Most dissolved solids in groundwater are acquired by the solution of constituents from the soil and rocks through which the water percolates, and in general, the degree of mineralization is determined by the solubility of the rock or soil, the area and duration of contact, and other factors such as pressure and temperature (Sinclair and Loeltz, 1963). Sediments in the Fernley area contain much readily soluble material capable of substantially increasing the mineral content of relatively fresh groundwater as it percolates through them. Sinclair and Loeltz (1963) cited data where the concentration of dissolved solids of water in the Truckee Canal was recorded at 128 parts per million (ppm) while water sampled from a pond located down gradient from the canal had a dissolved solids concentration of more than 3,200 ppm. Their analysis of 31 groundwater wells in the Fernley area showed dissolved solids concentrations ranging from 163 ppm to 4,190 ppm.

Lower Carson River Basin - Surface Water

Surface Water Supply

The long term, average annual Carson River flows into Lahontan Valley are calculated to be approximately 280,000 acre-feet (model simulations of U.S. Geological Service Water Resources Data, Nevada, 1992). Water from both the Carson River flows and that diverted from the Truckee River are stored in Lahontan Reservoir. Water released from Lahontan Reservoir for irrigation is distributed through the Carson Division by approximately 381 miles of canals and lateral ditches and becomes an important source of water for Lahontan Valley wetlands. The natural channel of the Carson River downstream from Lahontan Dam has been altered and incorporated as a facility for Newlands Project operations.

Carson River flows downstream from Lahontan Reservoir are generally dictated by irrigation demand and include water diverted from the Truckee River. The model results in the 1997 Adjusted OCAP EA (U.S. Department of the Interior, 1997) included calculations of a long term annual average release of 266,500 acre-feet from Lahontan Reservoir with an additional 54,200

acre-feet/year coming from precautionary releases or spills for an average annual flow volume of approximately 320,700 acre-feet downstream of Lahontan Reservoir.

Surface Water Quality

Water quality in the Lahontan Valley is highly variable because arsenic, boron, selenium and other water quality constituents of concern present in the Carson River. A number of studies (Finger et al., 1988; Hoffman et al., 1990; and Rowe et al., 1991) have shown that concentrations of arsenic, boron, chromium, copper, lithium, mercury, molybdenum, selenium, zinc, dissolved solids, sodium, and un-ionized ammonia in water, sediment, and/or biota in certain areas of Lahontan Valley have approached or exceeded Federal and State standards for the protection of aquatic life or the propagation of wildlife. Another study surveying water quality of irrigation drainage (Finger et al., 1993) found concentrations of arsenic, boron, selenium, molybdenum, and lithium exceeding limits for living organisms. Wetlands in Lahontan Valley receive water through a network of irrigation canals and drains. The quality of these waters is affected by agricultural practices as well as the presence of naturally occurring elements.

Lower Carson River Basin - Groundwater

Groundwater Supply

The major groundwater resources in the Lahontan Valley are contained in the two basic aquifer types (sedimentary and volcanic) that exist beneath the valley. These aquifers may contain as much as 200 million acre-feet of groundwater (Glancy, 1986).

Three aquifers have been delineated in the sedimentary deposits -- a shallow aquifer is present from the near-surface down to about 50 feet below the land surface, and is recharged by application of surface water to irrigated lands, as well as seepage out of canals and laterals. An intermediate aquifer occurs from 50 feet to about 1,000 feet below land surface, and a deep aquifer is located at depths greater than 500 to 1,000 feet below land surface. While more than 5,000 wells have been drilled into the sedimentary aquifers, few of these wells yield sufficient quantity or quality of water for uses other than domestic use (Herrera et al., 2000). The City of Fallon utilizes a number of wells in the shallow aquifer to supply a portion of its municipal water supply. Groundwater flow in this aquifer is generally northeastward in the north part of the valley and southeastward in the southern portion.

A basalt aquifer occurs from the volcanic cone of Rattlesnake Hill. This aquifer is highly permeable and contains water with a lower salt content (Herrera et al., 2000). The City of Fallon, Naval Air Station - Fallon and the Fallon Paiute-Shoshone Tribes use this aquifer for a water supply.

Groundwater Quality

Water quality in the shallow aquifer of Lahontan Valley varies greatly from west to east due to flow gradient and the presence of naturally occurring salts in the soils. Concentrations of dissolved arsenic in the aquifer range from less than 50 µg/L to over 150 µg/L (Glancy, 1986) and generally exceed both the EPA drinking water standard and the Nevada drinking water standard of 50 µg/L.

Groundwater flow in the intermediate aquifer is not as well understood as it is for the shallow aquifer, but there are suggestions general flow is also from west to east (Maurer et. al., 1994). Water from the intermediate aquifer is characterized as generally soft water with an alkaline pH (median pH value of 9.1). Concentrations of dissolved solids range from 100 mg/L to 1,000 mg/L in areas northwest of Fallon, but increase to as high as 8,000 mg/L in areas to the south. Dissolved arsenic concentrations generally exceed State drinking water standards, ranging from 25 µg/L west of Fallon up to 150 µg/L beneath Fallon, and as high as 1,400 µg/L near Stillwater National Wildlife Refuge (Glancy, 1986; Rowe et al., 1991). Additional studies (Maurer et. al., 1994) indicate intermediate aquifer water samples also exceed State standards for manganese, chlorides, and dissolved solids.

The basalt aquifer is the largest producing aquifer in the Fallon area, and is the main water source for the City of Fallon, the Fallon Paiute-Shoshone Indian Reservation, and the Naval Air Station at Fallon. Wells that tap into the aquifer extend about 500-600 feet below land surface. The aquifer is thought to be more than 4,000 feet in depth (U.S. Fish and Wildlife Service, 1996). Maurer et al. (1994) cite information indicating that water withdrawals have increased from 1,700 acre-feet/year in the 1970s to more than 3,000 acre-feet/year in 1992.

Water quality in the basalt aquifer is similar to that found in the shallow and intermediate aquifers. Glancy (1986) describes the aquifer as containing alkaline (median pH of 9.3), sodium-bicarbonate-chloride water. Dissolved solids concentrations in the basalt aquifer range from about 300 mg/L to 700 mg/L with arsenic concentrations ranging from 70 µg/L to 140 µg/L (Maurer, et al., 1994). Arsenic concentrations exceed State drinking water standards and analysis of aquifer water quality data from the period 1962 - 1992 shows a substantial increase in both chloride and arsenic concentrations near areas of pumping. The source of chloride and arsenic is assumed to be inflow from surrounding aquifers (Maurer et al., 1994).

3.7 AIR QUALITY

The primary pollutant of potential effect for this project is the concentration of inhalable particulates, Particulate Matter (PM_{10}). Suspended particulates can be derived from numerous sources. Nevada standards for PM_{10} are 50µg/m^3 for the annual arithmetic mean (AAM) and maximum 24-hour period reading of 150µg/m^3.

Lahontan Valley

Air quality in Lahontan Valley is good overall as the area is in attainment for all monitored air quality pollutants. Particulate emissions in Churchill County are primarily due to the large

percentage of lands throughout the valley that are desert with relatively low amount of vegetative cover. Wind blowing through the valley picks up dust particulates from the desert floor and other exposed soils surfaces, and can transport these particles long distances. A particulate emissions study completed by the Nevada Division of Environmental Protection, Bureau of Air Quality in 1975 showed that fugitive dust from the surrounding desert landscape accounted for 89 percent of the concentration of total suspended particulates in Churchill County (U.S. Fish and Wildlife Service, 1996). The study also showed that other major dust contributors were agricultural sources from burning, chemicals and equipment operations, (6 percent) and unpaved roads (4.5 percent).

Since May 1993, the Nevada Division of Environmental Protection, Bureau of Air Quality has regularly monitored PM_{10} levels at a sampling station in Fallon. The results of sampling for 1993 show an AAM of 41µg/m^3 with the highest 24-hour sample recording of 111µg/m^3 on September 28, 1993. PM_{10} data were also collected for a four month period in the summer and fall of 1993 in the vicinity of Lahontan Reservoir. These data show a high reading of 36µg/m^3 on September 4, 1993. All recorded data (Table 3.2) were below State standards.

Table 3.2. PM_{10} Concentrations, Annual Arithmetic Mean and Number of 24-hour Exceedances Reported for Fallon and Fernley Recording Sites.

YEAR	FALLON		FERNLEY	
	Annual Arithmetic Mean[a] ($\mu g/m^3$)	24-hour Exceedances[b]	Annual Arithmetic Mean[a] ($\mu g/m^3$)	24-hour Exceedances[b]
1993	40[c]	0[c]		
1994	27	0		
1995	28	0	21[c]	0[c]
1996	25	0	18	0
1997	26	0	16	0
1998	19[c]	0[c]	16[c]	0[c]

[a] State of Nevada and U.S. Environmental Protection Agency standard = $50\mu g/m^3$
[b] State of Nevada and U.S. Environmental Protection Agency standard = $150\mu g/m^3$
[c] Incomplete sampling year

Source: Nevada Division of Environmental Protection, Bureau of Air Quality, 2000

Truckee River Basin

With the exception of the Truckee Meadows located approximately 20 miles upstream from the analysis area boundary at Derby Dam, the Truckee River basin that has no identified air quality problems. A PM_{10} monitoring site has been operational in Fernley since 1995. Records from this site during the period 1995 - 1998 indicate the AAM ranged from 16 to $21\mu g/m^3$; there were no exceedances of the 24-hour standard.

3.8 SOCIO-ECONOMIC RESOURCES

Estimates of impacts to the local and regional economy will be derived using a regional economic impact assessment model developed under contract between the U. S. Department of the Interior and the Department of Applied Economics and Statistics, University of Nevada Reno. This model was developed to estimate the economic interrelationships, more commonly called linkages, between economic sectors in the analysis area. Linkages are used to estimate impacts on various economic sectors, personal income, and employment in the Newlands Project area from given changes in any one or a combination of sectors.

Population

Population centers in the analysis area include the town of Fernley in Lyon County and Fallon in Churchill County. Smaller, unincorporated communities are also included in this portion of the analysis area, including Hazen and the Swingle Bench area (Churchill County).

According to statistics compiled by the Nevada State Demographer (Nevada Division of Water Planning, 1999), the 1999 population for this 2-county area was 59,930 persons. Forty-three percent of this total resides in Churchill County. In 1998, 37 percent of Churchill County's residents lived in Fallon; similarly, Fernley's resident population accounted for about 30 percent of Lyon County's population. Annual population growth rates for Lyon and Churchill Counties between 1990 and 1997, were 5.71 percent and 4.03 percent, respectively. Population growth is expected to continue at over 3 percent annually for both counties.

Economic Activity and Land Use

The economies of Lyon County and Churchill County are based mostly on manufacturing, services, and agriculture; both counties are noted for alfalfa and beef cattle production. Table 3.3 lists the major economic sectors and the respective industrial output (Darden, et. al., 1999).

Table 3.3 Major County Economic Sectors Industrial Output

	Industrial Output (in millions)	
Economic Sector	**Churchill County**	**Fernley Area**
Agriculture[a]	$56.3	$6.1
Manufacturing	$83.6	$63.7
Construction	$65.2	$20.8
Trade	$61.6	$25.3
Services	$97.2	$12.1
Finance, Insurance, Real Estate	$81.9	$20.6

[a] includes dairy and livestock production, crop production and agricultural services.

Economic output for the Newlands Project area collectively totals $796 million dollars.

In Churchill County, the Fallon Naval Air Station is a major component of the economic base, in terms of employment and income. The unincorporated town of Fernley, in Lyon County, has several developed and important industrial parks. The town maintains a rural character, but has targeted itself as a location for housing for commuters to the Reno-Sparks area, small industries, and retirement centers for senior citizens. While the availability of subdivided land and housing

construction have attracted residents, Fernley's industrial sites too, are attracting businesses. In comparison to the nearby urban center of Reno-Sparks, Fernley residents enjoy a lower cost of living.

Residential housing growth reflects the population growth rates for both counties, with most housing radiating out from the central town sites into agricultural lands.

The northern portion of Lyon County (i.e., the Fernley area) is situated along the Truckee Canal. The predominant land use pattern is characterized by irrigated cropland and grazing land, warehouse areas and light manufacturing and industry. These latter types of businesses are showing increasing interest in this portion of Lyon County due to the availability of land and the area's excellent accessibility to both highway and railway transportation systems. Of Lyon County's 1,295,360 acres of surface area, nearly 67 percent of these lands are managed by the federal government (Bureau of Land Management, Bureau of Reclamation, and U.S. Forest Service). This is the fourth smallest county in Nevada (Nevada Division of Water Planning, 1999).

Churchill County's land use pattern is similar to that of Lyon County; that is, agriculture (both irrigated cropland and pasture, and unirrigated grazing lands), light industrial and manufacturing sites, and the Fallon Naval Air Station. Of the County's 3,144,320 total surface areas, over 68 percent of the area is managed by the Federal government (Bureau of Land Management, Fish and Wildlife Service, and Bureau of Reclamation). Relative to Nevada's seventeen counties, Churchill County ranks eighth in terms of geographic size (Nevada Division of Water Planning, 1999).

Several Native American tribes hold land bases within the analysis area. The Pyramid Lake Indian Reservation, home to the Pyramid Lake Paiute people, is located at the terminus of the Truckee River and covers 475,085 acres. In Fallon, the Fallon Paiute-Shoshone Tribes reside on the Fallon Indian Reservation. Both reservations derive income from commercial activities, tourism, recreation opportunities, and agriculture, all of which contribute to the local economy.

Employment and Income

The University of Nevada Reno, under contract with the Department of the Interior, developed and completed in December of 1999, an economic model of the analysis area. The following table lists employment and total income for the analysis area. Employment is based on the number of full- and part-time jobs within the analysis area. Total income is defined as personal income, which is based on wages, salaries, other income, dividends, interest, rent, and government transfer payments (Table 3.4).

Table 3.4 Employment and Total Income Within Analysis Area

	Personal Income [a] ($ millions)	Employment [b] (full- & part-time jobs)
Lyon County (Fernley area)	$49	2,220
Churchill County	$166	8,168
Total	**$215**	**10,388**

Sources:

[a] Survey of Current Business, May 1998. U.S. Department of Commerce, Economics and Statistics Administration, Bureau of Economic Analysis.

[b] Regional Economic Information System, December 1997. U.S. Department of Commerce, Bureau of Economic Analysis.

The service industry employs the most persons (34 percent in Churchill County; 27 percent in Lyon County). This sector, along with Federal, State, and local governments – which account for about 23 percent of total employment in Churchill County and 18 percent in Lyon County – are the major employers (Nevada Division of Water Planning, 1999). The Naval Air Station in Fallon (Churchill County) provides many employment opportunities, as well. According to information provided by the U.S. Navy, NAS Fallon provided 948 jobs in 1990, increasing to 2,516 jobs in 1996 (U.S. Fish and Wildlife Service, 1996).

Agriculture and agriculture-related services account for approximately 880 full- and part-time jobs in the area, or about eight percent of total employment (Darden, et. al., 1999).

Agriculture

Newlands Project agriculture in the Truckee and Carson River basins is the largest water user in both basins (California Department of Water Resources, 1991). Cattle ranching and dairy production are the primary livestock agricultural activities in the Project area (Lyon and Churchill Counties). Irrigated alfalfa is the preferred and dominant crop in Lahontan Valley due to the favorable climate, ability to store the crop, ease of transportation, and market viability (U.S. Fish and Wildlife Service, 1996). Other crops produced include wheat, corn, and barley. While a large percentage of the area's forage crops are used to feed beef cattle at major commercial feed lots and on individual farms, a considerable amount of hay is also exported from the immediate area (U.S. Bureau of Reclamation, 1988).

The area's estimated 1,500 farming operations range in size from residential gardens to farms of over 2,000 acres (U.S. Bureau of Reclamation, 1988). In terms of acreage ownership, 35 percent of individual land owners in the Project own parcels less than five acres in size. Approximately 25 percent of landowners have parcels greater than 40 acres in size and only about seven percent own properties larger than 100 acres. To lend some perspective to this breakdown, it should be noted that those properties larger than 40 acres comprise 78 percent of the total Project acreage, and individual landowners may own multiple, various-sized parcels.

The Newlands Project includes lands in both Lyon and Churchill Counties, however, the portion of irrigated Project lands in Lyon County amounts to only about 10 percent of the total irrigated acreage of Lyon County. Of the Newlands Project water-righted acreage, which currently consists of about 59,963 acres, the Truckee Division (Fernley, Hazen, and Swingle Bench area) makes up about 10 percent.

According to a report published by the University of Nevada, Reno (Darden, et. al., 1999), the Newlands Project generates about $58 million in agricultural output (dairy, livestock, feed grains, alfalfa, other hay, and other cultivated crops); cultivated agriculture represents about 46 percent of this total. Overall, the agricultural sector (including the agricultural services sector) in Churchill County and the Fernley portion of Lyon County contributes about 8 percent of the combined economic output ($796 million) in the analysis area.

Recreation

Most outdoor recreation in the analysis area occurs on public lands under the jurisdiction of the Bureau of Land Management, Bureau of Reclamation, U.S. Fish and Wildlife Service, or Nevada State Parks. The principal recreational use areas are Lahontan Reservoir State Park, Stillwater National Wildlife Refuge, Carson Lake Pasture, Fort Churchill State Park, and Dayton State Park. Other recreational use occurs at Newlands Project regulating reservoirs, Soda Lakes, Indian Lakes, areas along the Carson and Truckee Rivers, and the Carson Sink. The Pyramid Lake Paiute Tribe manages lake-based recreation opportunities at Pyramid Lake.

Stream-based recreation, in the form of fishing, kayaking, and commercial rafting activities, as well as picnicking, occur along various reaches of the Truckee River.

Wetlands in the area offer waterfowl hunting, bird watching, and sightseeing and other recreational activities. An average of almost 39,000 people annually visited Stillwater National Wildlife Refuge and Wildlife Management Area during the period 1994–1998 (USFWS, Stillwater NWR Visitor Data). Of these visitors, about half were there for general recreation such as bird watching and sightseeing. Day-use of facilities predominated and the vast majority of visitors (about 84 percent) were Fallon-area residents (U.S. Fish and Wildlife Service, 1996). Most non-local visitors engaged in birdwatching (approximately 80 percent) originated in the Reno/Sparks area (Englin, 1999).

A recent study conducted in the Fallon area calculated average expenditures for wetlands-based recreational activities to range from $21/person/trip for general recreationists to $38/person/trip for hunters (Englin, 1999). Based on these figures and the numbers of visitors, total recreation expenditures could range from $625,000 to $1.75 million annually.

Lahontan Reservoir is the largest body of water in Lahontan Valley and provides opportunities for boating, fishing, and camping. Lands surrounding the reservoir are under the jurisdiction of the Bureau of Reclamation, but have been managed by the Nevada Division of State Parks as a park since 1971 (U.S. Fish and Wildlife Service, 1996). The water-based recreation season at Lahontan Reservoir is recognized as being six months in duration with the bulk of annual visitation occurring in the period from May through August (U. S. Department of the Interior, 1997).

Annual visitation to the reservoir can approach 500,000 people during average and above average water years. The reservoir is the heaviest used camping and boating park in the state system due, in part, to its proximity to the urban areas of Reno and Carson City. Information from the Nevada Department of Conservation and Natural Resources (U .S. Department of the Interior, 1997) indicate that July is a particularly important month for recreational visitation at Lahontan Reservoir, with as much as 25 percent of annual visitation occurring during that month.

Visitation levels at Lahontan Reservoir totaled 383,000 in 1999, down just slightly from the 384,000 visits to the area in 1998. According to visitation statistics kept by Nevada Division of State Parks, within the District III parks (which includes Rye Patch Reservoir, Walker Lake, Fort Churchill, Belmont, and Berlin-Ichthyosaur State Park), Lahontan Reservoir receives almost 70 percent of the visits to the various sites in the District.

Recreational use of Lahontan Reservoir is strongly tied to water level. Visitation declines substantially with low water level. According to the Nevada Division of State Parks, a storage volume of 150,000 acre-feet (water elevation 4144.9') is preferred during the month of July. A volume of 120,000 acre-feet (water elevation 4139.5') is the minimum water volume for reasonable use of boat ramps at the reservoir, and below 90,000 acre-feet (water elevation 4133.3'), virtually no power boat use is possible (U.S. Fish and Wildlife Service, 1996).

Since 1976, the Division of State Parks has spent $6.2 million on shelters, restrooms, boat ramps, camp sites, roads, and support infrastructure at Lahontan Reservoir (U. S. Department of the Interior, 1997). Newlands Project regulating reservoirs include Harmon, Sheckler, S-Line, and Old River. Recreation is a secondary use of these reservoirs not specifically authorized as part of the Newlands Project. Recreational use includes hunting, target shooting, hunting dog trials, fishing, and use of radio-controlled boats or planes.

Hydropower Generation Resources

Irrigation demands, not hydropower generation, dictate Lahontan Reservoir releases. Since reservoir releases vary each month with irrigation demand, power generation and revenue

calculations are similarly variable. Controlled releases at Lahontan Dam are made preferentially through the Old Lahontan Power Plant, a 1.9 megawatt power plant. Similar arrangements are in place for the small power plant located at a 26-foot drop structure on the V Canal, approximately five miles downstream from the canal headworks.

The New Lahontan Power Plant, a 4.8 megawatt facility in 1989, receives controlled releases from Lahontan Dam, but second in priority to the Old Lahontan Power Plant. Electricity generated from this plant is purchased by Sierra Pacific Power Company at specified rates. Hydropower generation remains incidental to the primary water supply purposes of the Newlands Project.

Total revenues associated with the three power generation plants are tied to power generation and vary with hydrologic flow and irrigation releases. Power purchase agreements on the Old Lahontan and 26' Drop power plants are currently being negotiated between TCID and Sierra Pacific Power Company; therefore, modeled revenues associated with these two plants is unknown. Collectively, these two plants produce about 10.2 gigawatt hours of electricity.

Revenues from the New Lahontan Power Plant currently average approximately $908,000 annually. Collectively, revenues from Project hydropower generation facilities are used towards debt satisfaction on the New Lahontan Power Plant and reducing the delivered cost of water to the Newlands Project water rights holders.

3.9 CULTURAL RESOURCES

Lahontan Valley

Prehistoric resources in the Lahontan Valley date back to a period between 11,000 and 8,000 years ago (Elston, 1986) and are associated with shoreline features of ancient Lake Lahontan. Intensive human use of Lahontan Valley appears to have begun around 3,300 years ago with most of the human occupation centered around the wetland marshes. Inhabitants of the valley were attracted to the area by the diverse and abundant food resources such as fish and waterfowl.

The arrival of Euro-American settlers in Lahontan Valley in the 1850s to 1860s displaced the native peoples from their traditional areas of occupation. A number of historic cultural resources in the valley are associated with these settlers who farmed, ranched, mined, and traveled through the area.

Newlands Project

The Newlands Project is among the first irrigation systems to be built in the United States by the federal government. The goal of constructing the Project represented efforts to help settle and reclaim the arid West. Initial construction of the project began in 1903 with construction of Derby Dam. Additional major construction took place during the succeeding decades; today the

Newlands Project consists of four diversion dams, two major storage reservoirs and dams, and nearly 1,000 miles of canals, laterals, drains.

In recognition of the historic importance of the Newlands Project, major elements are listed on the National Register of Historic Places (National Register) and the entire Newlands Project system is generally considered eligible for listing. Derby Dam was formally placed on the National Register in 1978. Several other components of the Newlands Project were also listed on the National Register in 1980 as part of a thematic nomination. These components include Tahoe, Carson River Diversion, and Lahontan dams, Truckee, T, and V canals, and the hydroelectric powerplants at Lahontan and at the V Canal.

The remaining portions of the Newlands Project, the network of water conveyance systems and their operating structures, are considered eligible for inclusion in the National Register. An addendum to the original 1978 nomination is being prepared to clarify contributing and non-contributing elements to the National Register Archaeological District (Hardesty and Buhr n.d.). In general, an element of the Newlands Project is not considered eligible if it lacks integrity or if it fails to meet minimum size requirements. Consultation with the Nevada State Historic Preservation Office is currently required for concurrence with eligibility determinations.

Lower Truckee River from Derby Dam to Pyramid Lake

Cultural resources recorded in this reach include historic and prehistoric resources. Historic resources consist of a trash dump, two unnamed diversion structures, and foundations of the Adoth townsite. Prehistoric sites consist of at least one lithic scatter and habitation sites with burials, house pits, and stone artifacts (U.S. Department of the Interior and State of California, 1998).

Pyramid Lake

The area surrounding Pyramid Lake has been inventoried for cultural resources over several decades by staff and volunteers of the Nevada State Museum under the auspices of the Pyramid Lake Paiute Tribe. This work recorded over 900 archeological sites with a wide range of types of cultural resources sites being recorded. The report for this major effort is being prepared.

Information on the Paiute people who occupied the shores of Pyramid Lake during historic times indicates that a variety of fishing technologies were employed. The hunting of mammals and gathering of plant foods added to their diet. Tule mat or rye grass thatched houses were built during the cold winters months, although people also occupied rock shelters in tufa formations around the lake. People lived in shade structures during the hot summer months.

3.10 INDIAN TRUST ASSETS

Indian trust assets (ITAs) are legal interests in assets held in trust by the United States for Indian tribes or individuals. Federal agencies have a responsibility to protect and maintain assets held by the United States in trust for a tribe. Those assets include land, water rights, minerals and other natural resources and incomes derived from these assets. Federal agencies must carry out

their activities in a manner that protects trust assets and avoids adverse impacts when possible, and, if not, provide appropriate mitigation or compensation. There are two tribes within the EA analysis area; the Fallon Paiute Shoshone Tribes (Fallon Indian Reservation) and the Pyramid Lake Paiute Tribe (Pyramid Lake Indian Reservation). Trust assets of the tribes include land, water and water rights, fish and wildlife, and incomes derived from these assets. Inflow from the Truckee River into Pyramid Lake is the primary asset that could be affected by the alternatives in this EA.

Two meetings were held in March and April, 2000 for the purpose of consulting with the Pyramid Lake Paiute Tribe and others on determination of effects to trust assets from the A.B. 380 water acquisition program; the tribal trust assets at issue were Truckee River flows. An impact analysis was completed to evaluate if the water acquisition program supported by federal funds would have adverse impacts on tribal trust assets as compared to the No Action Alternative projected conditions. The projected conditions were based upon a predicted win/loss ratio of existing litigation in the Newlands Project. Based on review of the results of previous litigation, Reclamation determined the win/loss ratio to be 60:40 for the Tribe. Using this information, model results showed that there would be less inflow into Pyramid Lake under the No Action Alternative than under A.B. 380. Appendix C contains a Reclamation letter discussing this issue and how the 60:40 ratio was determined (attachments to the letter are available upon request from Reclamation's Lahontan Basin Area Office).

Indian Trust Lands

Western Nevada has long been inhabited by culturally distinct groups of people who have become known as the Northern Paiute, Washoe, and Western Shoshone Indians. Prior to the 20th century, the Northern Paiutes occupied areas of the Truckee River and Pyramid Lake, part of about 78,000 square miles of territory; the Washoes had a smaller territory that included Lake Tahoe, along with the present sites of Reno and Carson City. To the east of the Paiutes were the Shoshones, who inhabited central Nevada.

1. Pyramid Lake Paiute Indian Reservation

The formal recognition of the trust relationship between the Pyramid Lake Paiute Indian Tribe and the United States can be based on the 1859 withdrawal for Indian use of "a tract of land in the northern portion of the valley of the Truckee River, including Pyramid Lake"(USDI, 1859). After subsequent surveys, an Executive order was issued in March 1875 that further acknowledged the reservation of the Pyramid Lake Paiutes. The reservation presently covers 475,085 acres. Around the town of Wadsworth, within the reservation, are approximately 250 acres of private lands.

P.L. 101-618 affirmed that "all existing property rights or interests, all of the trust land within the exterior boundaries of the Pyramid Lake Indian Reservation shall be permanently held by the United States for the sole use and benefit of the Pyramid Lake Tribe (Section 210[b][1])." This legislation also recognizes Anaho Island as a part of the reservation and affirms tribal ownership

of the Lower Truckee River. The State of Nevada passed a law that relinquishes state ownership within the exterior boundaries of the Pyramid Lake Reservation.

2. Fallon Paiute Shoshone Indian Reservation and Colony

The present-day Fallon Paiute-Shoshone Indian Reservation began following the General Allotment Act of 1887, when members of the Paiute and Shoshone Tribes were allotted about 31,360 acres in the Lahontan Valley. The lands were located in an area that would become part of the Carson Division of the Newlands Project. In 1906, an agreement was made in which Tribal members would exchange their original 160-acre allotments of nonirrigable lands for 10-acre allotments of irrigable lands with paid up water rights. Of the 196 original allottees, 189 agreed to the exchange. A 1907 order by Interior reserved 4,640 acres on behalf of Tribal members who had relinquished their original allotments. An additional 840 acres adjoining the north boundary of the reservation were set aside in 1917.

Water was first delivered to the allotted lands between 1908 and 1910. Over time, however, many acres of the allotted lands were found unsuitable for irrigation because of topography, sandy soil, alkali, or lack of drainage. By 1970, a resurvey of the area indicated that about 1,600 acres were unsuited for irrigation. In 1978, P.L. 95-337 was passed to compensate for irrigation problems by, among other things, adding 2,640 acres to the reservation. The law also directed the completion of the irrigation system on the original 4,640 acres and extension of the system to allow irrigation of 1,800 acres of the added lands. Currently, the Fallon Paiute-Shoshone Tribe holds 8,020 acres of allotted and Tribal trust lands in the lower Carson River basin. A large portion of the land, 5,440 acres, has water rights. P.L. 101-618 limits irrigation to 3,025 of those acres; actual land in production is approximately 2,800 acres; some of these lands are owned by the Tribes, and others are owned by individuals. The Tribe has dedicated approximately 800 acres to sustain wetlands one water rights are obtained.

The Fallon Indian Colony was established with 40 acres of land. An additional 20 acres were added to the colony in 1958. Colony land is used for both residential and commercial purposes.

With the passage of P.L. 101-618, the Fallon Paiute-Shoshone Tribe is authorized to acquire properties which can become trust assets. These properties will generally include lands and water rights acquired by the Fallon Paiute-Shoshone Tribe using the settlement development funds provided through P.L. 101-618.

Water Rights

1. Pyramid Lake Tribe

The Federal actions that set aside Pyramid Lake Paiute Reservation explicitly reserved Pyramid Lake for the Tribe's benefit. Water rights for the reservation were claimed by Interior in 1913, at the same time Interior was claiming water for the Newlands Project. When the Orr Ditch Decree was finally issued in 1944, the Pyramid Lake Tribe was given an appropriation date of 1859, senior to all other appropriations. Under the Orr Ditch Decree, the Pyramid Lake Tribe

was allocated for irrigation an amount not to exceed 4.71 acre-feet per acre for 3,130 acres of bottomland farm (14,742 acre-feet) (Orr Ditch Decree Claim 1) and another 5.59 acre-feet per acre for 2,745 acres of benchlands (15,345 acre-feet) (Orr Ditch Decree Claim 2). Other than irrigation, no additional water was allocated for the fish or fish habitat in Pyramid Lake or the lower Truckee River or for maintaining lake elevation.

Over the years, the Tribe has actively worked to protect Pyramid Lake and increase inflow to the lake. With the elevation of Pyramid Lake falling and streamflows diminishing, the Tribe, in 1973, sought to reopen the Orr Ditch Decree to obtain additional water rights for the lake and its fishery. The Tribe alleged that the Federal Government had breached its trust responsibility when it defended water rights for the Newlands Project and did not diligently defend Tribal water rights for all purposes. Following lengthy litigation, the U.S. Supreme Court ruled in 1983 that the Orr Ditch Decree was final and binding.

When Interior acted to protect the endangered cui-ui with a set of operating criteria in 1967, the Tribe intervened, claiming that the Secretary was taking his trust responsibilities too lightly. The Secretary was advised that his trust responsibilities included conserving water for the Tribe. Interim implementation of the Newlands Project's Operating Criteria and Procedures decreased diversions from the Truckee River streamflows so that sufficient water is available to support spawning and outmigration of adult and young cui-ui.

2. Fallon Paiute-Shoshone Tribe

The Fallon Paiute-Shoshone Tribe entered into a settlement agreement that was ratified by Congress as Title I of P.L. 101-618, or the Fallon Paiute-Shoshone Indian Tribe Water Rights Settlement Act of 1990. This act permits the Tribe to acquire up to 2,415.3 acres of land and up to 8,453.55 acre-feet of water rights. These water rights added to the reservation may be used for irrigation, fish and wildlife, M&I, recreation, or water quality purposes, or for any other beneficial use subject to applicable laws of the State of Nevada. An expanded irrigation system was envisioned by P.L 95-337 and enacted by Congress in 1978; however the construction of this system was not pursued and was superseded by a financial settlement in 1990.

Fish and Wildlife

1. Pyramid Lake Tribe

The Pyramid Lake fishery remains one of the cultural mainstays of the Pyramid Lake Tribe. To protect the fishery, the Pyramid Lake Tribe maintains two hatcheries; is working cooperatively with Federal, State and private agencies to protect spawning areas and improve river access for spawning, as noted below; and seeks more inflow to Pyramid Lake, as noted previously. The Tribal fishery program operates hatcheries at Sutcliffe and Numana. Tribal hatcheries raise both the threatened LCT and endangered cui-ui. LCT hatcheries raise both the threatened LCT and endangered cui-ui. LCT hatcheries support a world-class fishery; the cui-ui hatchery is a "fail-safe" operation to maintain the strain in case of catastrophic event.

The Tribe uses a portion of the interest from the principle of the $25-million Pyramid Lake Paiute Fisheries Fund, provided under section 208 of P.L. 101-618, for management of the Pyramid Lake fishery. As part of endangered and threatened species recovery efforts, the Federal Government, in consultation and coordination with the Pyramid Lake Tribe, is developing a plan for rehabilitating lower Truckee River riparian habitat to enhance fish passage and spawning. Facilities, including Marble Bluff Dam and Pyramid Lake Fishway, are scheduled for further improvements. Along with conserving the fish, the Pyramid Lake Tribe manages and controls fishing and hunting rights on the reservation.

2. Fallon Paiute-Shoshone Tribe

The Fallon Paiute-Shoshone Tribe recognizes the importance of wetlands and the habitat they offer to birds and other wildlife. The Tribe has dedicated Tribal acreages for wetlands.

3.11 ENVIRONMENTAL JUSTICE

Environmental justice requirements are outlined in Executive Order 12898 published February 11, 1994, entitled “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations”. The requirements are that Federal agencies must identify and address disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low income populations. In August 1994, the Secretary of the Interior issued an environmental justice policy statement directing departmental action resulting in Interior’s “Strategic Plan for Environmental Justice”. Minority and low-income populations occur within the analysis area of this EA.

CHAPTER 4

ENVIRONMENTAL CONSEQUENCES

The environmental consequences of the two alternatives outlined in Chapter 2 are analyzed in this chapter. The two alternatives affect the water levels in Lahontan Reservoir and Pyramid Lake, the quantity of diversions into the Truckee Canal, the volume of flow in the Carson and Truckee rivers, and the amount of water flowing to the Lahontan Valley wetlands. The two alternatives also affect the number of water-righted acreage in the Newlands Project. The effects of these changes are analyzed for each of the eleven resources discussed in Chapter 3. Effects for the No Action Alternative and the Proposed Action Alternative are compared to current conditions and to each other.

In this chapter, various numbers are used to demonstrate the changes from current conditions resulting from each of the alternatives as well as differences between the two alternatives. The numbers are summarized in Table 4.1. Most of the numbers were calculated using the Below Lahontan Reservoir Model. Calculated numbers are approximate representations to assist in analysis of the environmental consequences of the two alternatives. To facilitate direct comparison with the numbers in Table 4.1, none of the numbers used in this chapter have been rounded.

4.1 VEGETATIVE COMMUNITIES

Potential effects to vegetation from implementation of the alternatives are related to change in water levels in Lahontan Reservoir and Pyramid Lake, flows in the Carson and Truckee rivers and flows into the Lahontan Valley wetlands. In addition, vegetation could be affected from the change in amount of agricultural acreage in the Newlands Project.

Alternative 1 - No Action

Riparian Communities Along the Carson and Truckee Rivers

Riparian vegetation plays an important role in riverine systems. Plant roots help stabilize the soil, and stems and leaves of emergent vegetation move with the current, decreasing flow velocity and reducing the scouring effects of water. Vegetation also traps sediment from the watershed, preventing it from settling on food producing areas, spawning sites, fish eggs and fry, and insect larvae. Emergent vegetation provides cover as well as a substrate for organisms and eggs. Shade provided by overhanging vegetation helps maintain cool water temperatures that are critical for many fish species. Organic material from riparian vegetation provides organic carbon for the aquatic ecosystem. Trees and shrubs provide habitat for terrestrial insects (a food source for many wildlife species), wildlife cover, and nesting sites for birds and mammals. Riparian zones and associated vegetation are critical for breeding birds and also serve as corridors for Table 4.1

Newlands Project A.B.380 Model Runs
Below Lahontan Reservoir Model Results for 1901-1995
(average in 1,000 acre-feet except as noted)

07/13/00

TABLE 4.1

	Current Condition	Current Wetlands Transfers		Future Wetlands Transfers	
		No Action	With AB380	No Action	With AB380
A.B.380 Acquisition in Truckee Division (acres)	0	0	65	0	65
A.B.380 Acquisition in Carson Division (acres)	0	0	6,435	0	6,435
Active Truckee Division Water Rights (acres)	3,814	4,571	5,641	4,571	5,641
Active Carson Division Water Rights (acres)	56,149	59,164	57,251	59,164	57,251
Total Project Active Water Rights (acres)	59,963	63,735	62,892	63,735	62,892
Permanent Transfer to Wetlands @ 2.99 ft (acres)	4,665	4,665	4,665	21,020	21,020
Non-Spill Year Lease for Wetlands @ 2.99 ft (acres)	0	0	0	7,530	7,530
Truckee Division Water Supply					
Demand at Truckee Canal	22.30	26.80	33.00	26.80	33.00
Diversion from Truckee Canal	21.64	25.96	31.90	25.96	31.90
Diversion Shortage	0.66	0.84	1.10	0.84	1.10
Diversion Shortage (% of demand)	2.96%	3.13%	3.33%	3.13%	3.33%
Carson Division Water Supply					
Demand at Lahontan	273.97	287.84	279.18	277.33	268.86
Lahontan Release	266.77	279.89	270.84	270.21	261.45
Release Shortage	7.20	7.95	8.34	7.12	7.41
Release Shortage (% of demand)	2.63%	2.76%	2.99%	2.57%	2.76%
Truckee Canal Operation					
Diversion from Truckee River	94.1	116.6	111.9	105.2	101.0
Diversion from Canal	21.6	26.0	31.9	26.0	31.9
Canal Loss	16.8	19.6	19.7	18.5	18.5
Inflow to Lahontan Reservoir	55.7	71.0	60.3	60.8	50.6
Lahontan Reservoir Operation					
Historical Flow at Fort Churchill	289.8	289.8	289.8	289.8	289.8
Reservoir Release and Spill	309.5	323.0	313.6	313.5	304.4
Reservoir Spill	42.7	43.1	42.7	43.3	43.0
Reservoir Loss	35.3	37.2	35.8	36.4	35.2
End-of-Month Storage					
May	221.8	234.4	225.4	228.5	220.3
June	219.0	229.4	221.3	224.9	217.8
July	186.0	194.0	186.8	191.1	184.5
August	147.5	153.9	148.1	151.6	146.5
September	122.0	127.4	122.3	125.8	121.4
Hydroelectric Power Production					
Old Plant (GWh)	8.02	8.19	8.06	8.11	7.87
26 Foot Drop (GWh)	2.40	2.61	2.47	1.90	1.75
New Plant (GWh)	11.84	12.97	12.19	12.22	11.50
New Plant Revenues	$907,670	$995,110	$934,910	$937,180	$881,700
Lahontan Valley Wetlands					
Return Flow	36.9	40.5	38.1	27.9	24.9
Lahontan Spill Delivered	12.2	11.9	12.0	9.1	9.4
Project Water Supply	13.6	13.6	13.5	77.3	77.1
Total Supply	62.7	66.0	63.6	114.3	111.4
Primary Habitat (acres)	13,597	14,411	13,811	24,368	23,556
Pyramid Lake					
Truckee River Inflow	477.6	455.3	460.1	466.7	470.8
Ending Lake Elevation (feet)	3,839.6	3,830.1	3,832.4	3,835.0	3,837.1
Ending Adult Female Cui-ui	605,700	224,200	312,600	333,600	392,200
Number of Cui-ui Spawning Years	73	70	72	72	73
Lahontan Reservoir Targets					
January (end of May / June target)	180	209	191	195	176
February (end of May / June target)	180	209	191	195	176
March (end of May / June target)	180	209	191	195	176
April (end of May / June target)	180	209	191	195	176
May (end of June target)	180	209	191	195	176
June	196	225	207	211	192
July	166	195	177	181	162
August	106	135	117	121	102
September	70	99	81	85	66
October	58	87	69	73	54
November	80	109	91	95	76
December	107	136	118	122	103

Note:
(1) Leases for wetlands are assumed to occur in non-spill years (70 of the 95 years).
(2) Carson Division demand for the No Action Alternative is 280,100 AF without leasing and 276,400 AF with leasing.
(3) Carson Division demand for the Action Alternative is 271,800 AF without leasing and 267,800 AF with leasing.
(4) Lahontan targets are based on the Carson Division demand without leasing since targets are set on October 1 of each year and the status of leases for the next irrigation season would not likely be known at that time.

migrating and dispersing animals. Since existence of riparian vegetation and the availability of water are closely linked, changes to streamflows in the Carson and Truckee Rivers could affect the abundance, distribution and condition of riparian vegetation.

Under the No Action Alternative the increase over current conditions in the volume of releases and spills from Lahontan Reservoir that could be attributed to the resolution of water rights transfer and petition litigation would be 13,500 acre-feet per year, primarily due to the increase in irrigated acreage. This increased volume would be tempered by completion of the wetlands water rights acquisition program, ultimately resulting in a smaller (4,000 acre-feet) annual total increase over current conditions. The 4,000 acre-foot change represents only a relatively small increase in comparison to the current average annual spill and release volume of 309,500 acre-feet per year. The relatively small change in flows anticipated with the No Action Alternative is not expected to impact riparian habitats along the river. Some riparian habitat along Newlands Project irrigation canals and drains would likely be lost with the FWS purchase and transfer of water rights because some canals and drains may be abandoned as agricultural irrigation activities are terminated.

Increased storage levels in Lahontan Reservoir under this alternative as compared to current conditions could benefit the cottonwood and willow riparian plant communities around the perimeter of the reservoir.

Under this alternative, acreage in the Newlands Project is expected to increase as water rights transfer and petition litigation is resolved. In turn, annual diversions at Derby Dam would increase from current conditions by 22,500 acre-feet. Upon completion of the FWS water rights acquisition program, this amount would be modified and result in an increase of 11,100 acre-feet per year as compared to current conditions. The additional average annual diversion would result in decreased inflow to Pyramid Lake of 10,900 acre-feet per year and ultimately, a decline of approximately 4.6 feet in lake elevation over a 95-year period as compared to current conditions.

Riparian vegetative communities downstream from Derby Dam would be adversely affected as flows in the Truckee River are reduced by increased diversions at Derby Dam and the amount and quality of riparian habitat decreases. This could also adversely affect any riparian plants around the perimeter of Pyramid Lake. Riparian habitat along drains and canals in the Truckee Division may be slightly benefited by the increased amount of diversions into the Truckee Canal.

Wetland Plant Communities

The amount and quality of wetland plant communities downstream from Derby Dam would be adversely affected as flows in the Truckee River are reduced under the No Action Alternative by increased diversions at Derby Dam.

The resolution of water rights transfer and petition litigation is anticipated to result in more annual flow to the wetlands (3,300 acre-feet) resulting in approximately 814 more acres

of primary wetland habitat. During the time period in which the water rights transfer and petition litigation is being resolved, the FWS Lahontan Valley wetlands water rights acquisition program will be implemented in the Lahontan Valley. This water rights acquisition program will influence conditions anticipated as part of the No Action Alternative. Under the No Action Alternative with the wetlands water rights program completed, total inflow to the Lahontan Valley wetlands is expected to increase by approximately 51,600 acre-feet per year over current conditions. The large increase in inflow would result in approximately 10,771 more acres of primary wetlands as compared to current conditions.

Desert Plant Communities

Under this alternative, the amount of irrigated agricultural acreage would increase over current conditions by approximately 3,772 acres upon resolution of the water rights transfer and petition litigation, decreasing the amount of desert plant communities. As the FWS wetlands water rights acquisition program is completed, the total number of irrigated acres is anticipated to decrease by around 21,000 acres. Most of the 21,000 acres would likely return to desert plant communities.

Agriculture

Under this alternative, the amount of irrigated agricultural acreage would increase over current conditions by approximately 3,772 acres upon resolution of the water rights transfer and petition litigation. As the FWS wetlands water rights acquisition program is completed, the total number of irrigated acres is anticipated to decrease by an estimated 21,000 acres.

Noxious Weeds

The potential for noxious weeds to increase could occur from a variety of actions associated with this alternative. Lower quantities of water Truckee River under this alternative could open up ground for invasion by noxious weeds. Lower Pyramid Lake levels under this alternative could also open up areas for invasion. However, higher quantities of water in the Carson River and higher storage levels in Lahontan Reservoir could reduce the amount of area open for invasion. The higher amounts of water in the wetlands may preclude some noxious weeds that can not tolerate wet conditions but may provide additional habitat for other species that thrive in wet areas. As agricultural acreage converts back to desert plant communities, the potential for invasion by noxious weeds increases.

Alternative 2 - Proposed Action

Riparian Communities Along the Carson and Truckee Rivers

Under the Proposed Action Alternative the increase over current conditions in the volume of releases and spills from Lahontan Reservoir that could be attributed to the resolution of water rights transfer and petition litigation would be 9,400 acre-feet per year lower than under the No Action

Alternative. The increased volume would be 9,500 acre-feet per year upon completion of the FWS wetlands water rights acquisition program. The relatively small change in flows compared to the No Action Alternative is not expected to impact riparian habitats along the river. Some riparian habitat along Newlands Project irrigation canals and drains would likely be lost with the FWS purchase and transfer of water rights because some canals and drains may be abandoned as agricultural irrigation activities are terminated.

The small decrease in average storage levels in Lahontan Reservoir under this alternative as compared to the No Action Alternative is not expected to affect the cottonwood and willow riparian plant communities around the perimeter of the reservoir.

Under this alternative, acreage in the Newlands Project is expected to increase upon implementation of A.B. 380; the increase would be 843 acres less than under the No Action Alternative. Annual diversions at Derby Dam would be 4,200 acre-feet per year less than the No Action Alternative upon implementation of A.B. 380 and 4,700 acre-feet per year less upon completion of the FWS water rights acquisition program. The additional diversion would result in decreased inflow to Pyramid Lake of 4,800 acre-feet per year and ultimately 4,100 acre-feet per year less than the No Action Alternative. Pyramid Lake elevation would be approximately 2.1 feet higher over a 95-year period than under the No Action Alternative.

Riparian vegetative communities downstream from Derby Dam and around the perimeter of Pyramid Lake would have less adverse impacts due to higher river flows than under the No Action Alternative. Riparian habitat along drains and canals in the Truckee Division would have less available water under this alternative than under the No Action Alternative.

Wetland Plant Communities

Due to higher flows in the Truckee River under this alternative than under the No Action Alternative, the amount and quality of wetland plant communities downstream from Derby Dam would have less adverse effects than under the No Action Alternative.

Implementation of A.B. 380 would result in 2,400 acre-feet per year less water flowing to the wetlands and approximately 600 less acres of primary wetland habitat. Upon completion of the FWS Lahontan Valley wetlands water rights acquisition program total inflow to the Lahontan Valley wetlands would be 48,700 acre-feet, 2,900 acre-feet per year less than under the No Action Alternative. Under this alternative there would ultimately be approximately 812 less acres of primary wetlands than under the No Action Alternative.

Desert Plant Communities

Under this alternative, the amount of irrigated agricultural acreage would increase over current conditions by approximately 2,929 acres upon implementation of A.B. 380, decreasing the amount of desert plant communities. As the FWS wetlands water rights acquisition program is completed, the total number of irrigated acres is anticipated to decrease by an estimated 21,000

acres. Most of the 21,000 acres would likely return to desert plant communities. There would be approximately 843 more acres in desert plant communities under this alternative than under the No Action Alternative.

Agriculture

Under this alternative, the amount of irrigated agricultural acreage would increase over current conditions by approximately 2,929 acres upon implementation of A.B. 380, decreasing the amount of desert plant communities. As the FWS wetlands water rights acquisition program is completed, the total number of irrigated acres is anticipated to decrease by an estimated 21,000 acres. There would be approximately 843 less acres of agricultural plant communities under this alternative than under the No Action Alternative.

Noxious Weeds

The potential for noxious weeds to increase could occur from a variety of actions associated with this alternative. Higher quantities of water Truckee River under this alternative than under the No Action Alternative could prevent small amounts of invasion by noxious weeds. Higher Pyramid Lake levels under this alternative could also prevent invasion in some areas. However, lower quantities of water in the Carson River and lower storage levels in Lahontan Reservoir under this alternative than under the No Action Alternative could open some areas to infestations. The lower amounts of water in the wetlands under this alternative than under the No Action Alternative may favor some noxious weeds that can not tolerate wet conditions but may reduce habitat for other species that thrive in wet areas. The potential for noxious weed invasion on converted agricultural acres is higher under this alternative due to the 843 less acres of agriculture.

Cumulative Effects

The Truckee River Operating Agreement (TROA) would modify operations of federal and non-federal reservoirs in the Truckee River basin. It is expected that TROA would increase flows in the lower Truckee River, potentially benefitting wetland and riparian species, however effects of TROA are unknown and can not be quantified at this time. Negotiations have not yet been completed, but once a preliminary agreement is concluded this action will be analyzed in an Environmental Impact Statement.

The Water Quality Settlement Agreement (WQSA) calls for a combination of federal, state and local governments to spend $24 million to acquire Truckee River water rights. The agreement settles litigation and is expected to enhance Truckee River flows during normally low periods in the summer months to improve water quality in the lower Truckee River. A total of 9,000 to 12,000 acre-feet of Truckee River water rights are proposed to be acquired, with a majority of those water rights acquisitions expected from the Truckee Division of the Newlands Project. An Environmental Impact Statement is currently being prepared to analyze this action; if approved this acquisition program would likely occur over a period of 10 or more years. If approved the WQSA could decrease riparian and agricultural plant communities and increase desert

communities in the Truckee Division. The WQSA could provide additional water that would benefit riparian and wetland communities along the lower Truckee River.

Churchill and Lyon counties, specifically the Fallon and Fernley areas, have experienced an annual growth rate of nearly three percent in recent years. To accommodate this growth, some agricultural lands are being sold and converted to housing and commercial developments. Areas of arid desert habitat are also being developed. Growth and development further decreases agricultural and desert plant communities in the analysis area.

Resolution of the recoupment lawsuit in favor of the United States has the potential to decrease diversions at Derby Dam and increase flow in the lower Truckee River and into Pyramid Lake. Additional river flow would benefit plant communities along the Truckee River and Pyramid Lake. Decreased diversions into the Truckee Canal would negatively affect riparian and wetland habitat along the Newlands Project irrigation canals and drains, the Carson River, and around Lahontan Reservoir. It could also decrease the amount of inflow into the Lahontan Valley wetlands, adversely affecting the quantity of primary wetlands. It is unknown at this time if recoupment will occur or how it would be implemented, and its potential effects cannot be accurately quantified or predicted at this time.

The effects from these cumulative actions on river flows, land conversion, and lake and reservoir surface elevation will depend on what combination of these actions occur and the timing of their implementation. Due to the relatively small magnitude of effects expected from the alternatives analyzed in this EA, it is not expected that the effects of either alternative added to other potential actions would cause significant adverse cumulative effects to any plant communities in the analysis area. The small changes expected under both alternatives would not result in any significant effects to any of the plant communities in the analysis area.

4.2 ENDANGERED, THREATENED, CANDIDATE AND SENSITIVE SPECIES AND OTHER FISH AND WILDLIFE SPECIES

Potential effects of both alternatives on fish and wildlife are discussed by the various habitats that occur in the analysis area. The No Action Alternative represents the conditions reasonably expected to occur without the A.B. 380 water rights acquisition program. Effects of the No Action Alternative are compared to current conditions. Effects of the Proposed Action Alternative are compared to the No Action Alternative.

Wildlife species utilizing the various habitats of the analysis area are listed in Chapter 3 under sections 3.2 Wildlife, 3.3 Fish, and 3.4 Endangered, Threatened, Candidate and Sensitive Species. Federally listed and candidate species are specifically identified for each habitat type discussed in this section.

Alternative 1 - No Action

Lahontan Valley Wetland Habitat

Federally listed species associated with the wetland habitats located in the Lahontan Valley include the American peregrine falcon and bald eagle.

As the water rights transfer and petition litigation is resolved over time, an additional 3,772 acres of land would be returned or converted to agriculture in Lahontan Valley. This increase in irrigated acreage is expected to result in an increase of approximately 3,600 acre-feet per year in agricultural drainwater to the Lahontan Valley wetlands. Conversely, Lahontan Reservoir spills delivered to the wetlands would decrease by approximately 300 acre-feet per year as more agricultural acreage is returned to or put into production. While the resolution of litigation is anticipated to result in more water being available to the wetlands, that water will generally be of lower quality because most of the increased wetland flows are agricultural drainwater and not prime water.

During the time period in which the water rights transfer and petition litigation is being resolved, the FWS Lahontan Valley wetlands water rights acquisition program will be implemented in the Lahontan Valley. This water rights acquisition program will influence conditions anticipated as part of the No Action Alternative. The wetlands water rights acquisition program will reduce the quantity of irrigated agricultural acreage in the valley and will consequently affect the amount of water reaching the wetlands due to decreased agricultural drainwater and delivered spills. Under the No Action Alternative with the wetlands water rights program completed, total inflow to the Lahontan Valley wetlands is expected to increase by approximately 51,600 acre-feet per year over current conditions. This amount includes return flows, Lahontan Reservoir spills delivered to the wetlands and acquired water rights. The large increase in inflow of high quality water and subsequent increase in wetland acreage is expected to result in improved habitat conditions through creation and maintenance of additional food resources within the wetlands and improved water quality conditions. The wetlands and its associated species will benefit greatly from the FWS water rights acquisition program.

In addition to the general benefits to fish and wildlife species noted above, the total increase in wetland habitat provides benefits in the form of increased food resources and increased riparian roosting habitat for wintering bald eagles in the wetlands. The enlarged wetland habitat will result in an increase in fish populations that are a food source of eagles.

Improving habitat conditions of wetlands-dependent birds will benefit American peregrine falcons in the area because some of these birds are a food source for the peregrine falcon. The increase in wetland habitat may attract more peregrine falcons to the Lahontan Valley.

Lower Carson River and Newlands Project Irrigation Canals and Drains Habitat

The bald eagle is the only federally listed species currently known to utilize habitat along the Carson River and Newlands Project irrigation canals and drains.

Under the No Action Alternative the increase over current conditions in the volume of releases and spills from Lahontan Reservoir that could be attributed to the resolution of water rights transfer and petition litigation would be 13,500 acre-feet per year, primarily due to the increase in irrigated acreage. This increased volume would be tempered by completion of the wetlands water rights acquisition program, ultimately resulting in a smaller (4,000 acre-feet) annual total increase over current conditions. The 4,000 acre-foot change represents only a relatively small increase in comparison to the current average annual spill and release volume of 309,500 acre-feet per year, but may result in a slight benefit to fish species in the river.

The change in flows anticipated with the No Action Alternative is not expected to impact riparian habitats along the river. Some riparian habitat along Newlands Project irrigation canals and drains would likely be lost with the FWS purchase and transfer of water rights because some canals and drains would be abandoned as agricultural irrigation activities are terminated. Overall combined effects to riparian habitat from this alternative are not expected to adversely impact wildlife species. Bald eagles wintering along the river and their habitat would not be adversely affected by the small change in river flows under this alternative.

Agricultural and Upland Habitat

Federally listed and candidate species utilizing this type of habitat within the analysis area include the American peregrine falcon and the mountain plover.

Under this alternative, the amount of irrigated agricultural acreage would increase over current conditions by approximately 3,772 acres upon resolution of the water rights transfer and petition litigation. As the FWS wetlands water rights acquisition program is completed, the total number of irrigated acres is anticipated to decrease by an estimated 21,000 acres. Wildlife species utilizing irrigated agricultural land would be adversely affected by the large reduction in quantity of agricultural land since much of this land is likely to revert to desert. Some species may adapt to the change or shift their use to other habitats. Generally, the increased biodiversity associated with additional wetland acres would provide a benefit to many species.

Peregrine falcons using agricultural and upland habitats are not expected to be adversely affected by the changes from this alternative because no effects to falcon nesting and roosting habitats located on cliff ledges would occur. Further, additional wetlands habitat will encourage populations of wetland-dependent bird species, many of which are prey for the falcons.

Mountain plovers utilize alkali flats, pastures, agricultural fields and other open arid habitat. While acreage in irrigated agriculture would initially increase under this alternative, it would decrease significantly upon completion of the FWS water rights acquisition program. The

previously irrigated acreage would be replaced primarily by open arid habitat that is also suitable for this species. Mountain plovers occur in minimal numbers in the Lahontan Valley and suitable habitat is abundantly available for this species. No adverse effects to mountain plovers are expected to result from this alternative.

Lahontan Reservoir Habitat

The bald eagle is the only federally listed species utilizing habitat in the vicinity of Lahontan Reservoir.

As resolution of water rights transfer and petition litigation is completed, average May through September storage levels in Lahontan Reservoir are expected to increase under this alternative by 8,560 acre-feet per year as compared to current conditions. Completion of the FWS wetlands water rights acquisition program will modify this increase eventually resulting in an average increase of approximately 5,120 acre-feet per year over current conditions. This increase represents only three percent of the total average storage for these months under current conditions, therefore this relatively small amount of change is not expected to affect fish species in the reservoir.

The increased amount of water in the reservoir during this time of year may provide a minor improvement to the cottonwood, willow and other riparian habitats around portions of the of the reservoir perimeter. Overall, the anticipated change in Lahontan Reservoir levels would provide only slight changes from current conditions for fish and wildlife species, including bald eagles, that utilize this habitat.

Lower Truckee River and Pyramid Lake

Federally listed species utilizing this type of habitat include cui-ui and Lahontan cutthroat trout (LCT).

Under this alternative, acreage in the Newlands Project is expected to increase as water rights transfer and petition litigation is resolved. In turn, annual diversions at Derby Dam would increase from current conditions by 22,500 acre-feet. Upon completion of the FWS water rights acquisition program, this amount would be modified and result in an increase of 11,100 acre-feet per year as compared to current conditions. The additional average annual diversion would result in decreased inflow to Pyramid Lake of 10,900 acre-feet and ultimately, a decline of approximately 4.6 feet in lake elevation as compared to current conditions. Model runs for cui-ui indicate that the number of spawning years would decrease from 73 to 72 out of 95 modeled years. As a result, the population index of adult female cui-ui would decrease from 605,700 to 333,600.

Under this alternative, decreased flows in the lower Truckee River and decreased inflows to Pyramid Lake would adversely impact fish species in this reach of the river and in Pyramid Lake, including cui-ui and LCT. The severity of impacts would be somewhat less as the FWS

wetlands water rights program is completed and diversions at Derby Dam are decreased.

Wetland and riparian habitat downstream from Derby Dam would also be adversely affected as flows in the river are reduced by increased diversions at Derby Dam. Wildlife species utilizing the wetland and riparian habitat would be adversely affected as the amount and quality of habitat decreases.

Alternative 2 - Proposed Action

Lahontan Valley Wetland Habitat

Federally listed species associated with the wetland habitats located in the Lahontan Valley portion of the analysis area include the American peregrine falcon and bald eagle.

Current annual average wetlands water supply is calculated to be 62,700 acre-feet. With implementation of the A.B. 380 Proposed Action Alternative, the total annual water supply to Lahontan Valley wetlands upon completion of the FWS water rights acquisitions is estimated to be 111,400 acre-feet. This amount is approximately 2,900 acre-feet per year less than the total wetlands water supply under the No Action Alternative. The No Action Alternative would allow the activation and irrigation of 843 agricultural acres more than are anticipated with implementation of A.B. 380. Most of the difference between the A.B. 380 Proposed Action Alternative and the No Action Alternative can be attributed to fewer total irrigated agricultural acres under the former alternative and consequently a reduced volume of return flows from irrigated fields.

While the Proposed Action Alternative will result in 2,900 fewer acre-feet of water per year being available to the wetlands than the No Action Alternative, this decreased amount is not expected to cause significant adverse impacts to the wetlands or wetlands-dependent wildlife. The Proposed Action Alternative includes the expected FWS water rights acquisitions which will provide substantially more water and higher quality water to wetlands than they currently receive. The acquisitions will benefit the wetlands by providing and maintaining substantially more wetlands acres and habitat than currently exist.

In addition to the general benefits to fish and wildlife species noted above from the expected FWS water rights acquisitions, specific benefits to the bald eagle under this alternative include an increase in wetlands fish populations that are a food source of the eagle. The total increase in wetland habitat also provides benefits to wintering bald eagles that inhabit the wetlands by enhancing habitat and other food resources. Due to the 2,900 acre-foot amount of decrease in annual flows to the wetlands under this alternative, the benefits would be slightly less than under the No Action Alternative.

American peregrine falcons are also expected to benefit from this alternative. Additional wetlands water supply from the FWS water rights acquisition program will enhance habitat for wetland-dependent birds which are a food source for the peregrine falcon. The increase in

wetland habitat may attract more peregrine falcons to the Lahontan Valley. In comparison to the No Action Alternative, these benefits would be slightly less due to the 2,900 acre-foot decrease in annual flows to the wetlands.

Lower Carson River and Newlands Project Irrigation Canals and Drains Habitat

The bald eagle is the only federally listed species known to use habitat along the Carson River and Newlands Project irrigation canals and drains.

Under the Proposed Action Alternative releases and spills from Lahontan Reservoir are estimated to average approximately 304,400 acre-feet per year compared to 313,500 acre-feet for the No Action Alternative. Currently, releases and spills average 309,500 acre-feet per year. The 9,100 acre-foot decrease in releases and spills anticipated with the Proposed Action Alternative as compared to the No Action Alternative may adversely affect fish species in the river. The decrease to of releases and spills 304,400 acre-feet per year under the Proposed Action Alternative is not expected to be significant since the reduction in flow is only 1.6 percent of the current annual amount of spills and releases.

Average river flows anticipated with the Proposed Action Alternative are lower than those projected for the No Action Alternative, and riparian habitats along the river and in the Carson Division are likely to decline slightly as a result. This decline in riparian habitat is not expected to be significant because the change in river flow is so small. Overall, the effects to riparian habitat that would occur under this alternative are not expected to adversely impact wildlife species. Bald eagles wintering along the river and their habitat would not be significantly affected by the expected change in river flows.

Agricultural and Upland Habitat

Federally listed and candidate species utilizing this type of habitat within the analysis area include the American peregrine falcon and the mountain plover.

Under the Proposed Action Alternative, there would be 843 fewer irrigated agricultural acres are expected under the No Action Alternative. Some wildlife species utilizing agricultural land may be adversely affected by the reduction in agricultural land, but some species may shift their use to other habitats. Overall, the effects are not expected to be significant because the reduction in agricultural acreage is very small and represents a decrease of only 1.3 percent of the acreage that is expected to be available with the No Action Alternative.

No adverse effects to peregrine falcon utilizing this type of habitat are expected as the actions under this alternative have no effect on falcon nesting and roosting habitat on cliff ledges. Mountain plovers utilize alkali flats, pastures, agricultural fields and other open arid habitat. While the number of irrigated acres under this alternative are expected to be fewer than those anticipated for the No Action Alternative, the agricultural fields would be replaced primarily by open arid habitat that is also suitable for this species. Mountain plovers occur in minimal

numbers in the Lahontan Valley and suitable habitat is abundantly available for this species. No adverse effects to mountain plovers are expected from this alternative.

Lahontan Reservoir Habitat

The bald eagle is the only federally listed species known to be utilizing habitat in the vicinity of Lahontan Reservoir

In comparison to the No Action Alternative, average May through September storage levels in Lahontan Reservoir would decrease under this alternative by approximately 6,280 acre-feet. This decrease represents only three percent of the total average storage under the No Action Alternative. Therefore, this small amount of change is not expected to affect fish species in the reservoir.

The decreased amount of water in the reservoir during this time of year may have slight adverse impacts to the cottonwood and willow riparian habitats around portions of the perimeter of the reservoir. Since the decrease in storage volume is expected to be small, impacts to the habitat would be slight and would not result in significant adverse impacts to wildlife species, including bald eagles, that utilize these riparian habitats.

Lower Truckee River and Pyramid Lake

Federally listed species utilizing this type of habitat include cui-ui and LCT.

If the Proposed Action is implemented, diversions at Derby Dam are estimated to average 101,000 acre-feet per year, 4,200 acre-feet less than would occur under the No Action Alternative. As a result, inflow to Pyramid Lake would be 4,100 acre-feet per year more than under the No Action Alternative. Model results indicate that at the end of the modeling period, water surface elevation at Pyramid Lake would be approximately 2.1 feet higher under the Proposed Action Alternative than under the No Action Alternative.

Model data for cui-ui indicate that the Proposed Action Alternative would result in one more spawning year than would occur under the No Action Alternative. As a result, there would be 58,600 more adult female cui-ui by the end of the modeling period. Overall, this alternative would be more beneficial to fish and their habitat in the Lower Truckee River and in Pyramid Lake than conditions expected with the No Action Alternative.

Inflow to Pyramid Lake is estimated to average 470,800 acre-feet per year with the Proposed Action Alternative compared to 466,700 acre-feet per year with the No Action Alternative. While the difference between the two alternatives is relatively small, wetland and riparian habitats will benefit slightly from the additional flow under the Proposed Action Alternative.

Summary of Effects to Endangered, Threatened and Candidate Species Under the Proposed Action Alternative as Compared to the No Action Alternative

The Proposed Action Alternative is anticipated to result in less water flowing to the Lahontan Valley wetlands than would occur under the No Action Alternative. The 2,900 acre-feet per year difference is likely to have some adverse effect on the total number of acres of wetland habitat, but is not expected to result in any significant adverse effects to American peregrine falcon or bald eagle. The Proposed Action Alternative results in fewer irrigated acres than the No Action Alternative, consequently less agricultural drainwater would flow to the wetlands under the Proposed Action Alternative. While this reduction in the volume of drainwater will affect the number of wetland habitat acres, it may slightly increase habitat quality utilized by falcons and eagles in the wetlands because drainwater is generally poorer quality than prime water.

The Proposed Action Alternative is not expected to affect upland habitat used for peregrine falcon nesting and roosting. Similarly, no adverse effects to mountain plover are expected as the decrease in agricultural acreage will increase desert upland habitat, both of which are suitable habitat for the plover.

Overall, average annual flow in the Carson River downstream of Lahontan Reservoir and in many areas of the Newlands Project irrigation canals and drains are expected to be lower with the Proposed Action Alternative than with the No Action Alternative, but the small amount of decreased flow is not expected to have significant effects to this riparian habitat utilized by bald eagles. The slightly lower average storage levels of Lahontan Reservoir are also not expected to have any significant effects on riparian habitat around the perimeter of the reservoir that are utilized by bald eagles.

The Proposed Action Alternative is expected to result in less water being diverted from the Truckee River than the No Action Alternative. As a result, the Proposed Action Alternative will enable more water to flow to Pyramid Lake which will benefit cui-ui and LCT and their habitat.

Cumulative Effects

Cumulative effects to fish and wildlife species and their habitat are expected from numerous ongoing and reasonably foreseeable actions affecting the analysis area.

The Truckee River Operating Agreement (TROA) would modify operations of federal and non-federal reservoirs in the Truckee River basin. Among other benefits, these modifications are expected to improve spawning conditions for threatened and endangered fish species and provide additional municipal and industrial water during drought conditions. Negotiations have not yet been completed, but once a preliminary agreement is concluded this action will be analyzed in an Environmental Impact Statement.

The Water Quality Settlement Agreement (WQSA) calls for a combination of federal, state and local governments to spend $24 million to acquire Truckee River water rights. The agreement settles litigation and is expected to enhance Truckee River flows during normally low periods in the summer months to improve water quality in the lower Truckee River. A total of 9,000 to

12,000 acre-feet of Truckee River water rights are proposed to be acquired, with a majority of those water rights acquisitions expected from the Truckee Division of the Newlands Project. An Environmental Impact Statement is currently being prepared to analyze this action; if approved this acquisition program would likely occur over a period of 10 or more years.

Both WQSA and TROA are expected to increase average annual flow in the Truckee River and therefore increase inflow into Pyramid Lake. Additional Truckee River flow is expected to benefit fish species in the river and lake, including cui-ui and LCT. Additional flow should also improve riparian and wetland habitat along the lower Truckee River for species utilizing this type of habitat. Preliminary model runs for the WQSA and TROA estimate the following changes from current conditions if both actions were to be implemented:

- The number of years with cui-ui spawning runs would increase by 2
- The average number adult female cui-ui would increase by approximately 267,000
- Average annual inflow to Pyramid Lake would increase by over 31,000 acre-feet
- At the end of the modeling period, average Pyramid Lake elevation would increase by 12.2 feet

If implemented, the WQSA would reduce the number of irrigated acres in the Truckee Division, the amount of water diverted to serve water rights in the Truckee Division, and the volume of water applied to fields in the Division. Many of these acres are expected to revert to desert and wildlife species that cannot adapt to the change from agricultural fields to desert will be adversely affected.

Churchill and Lyon counties, specifically the Fallon and Fernley areas, have experienced an annual growth rate of nearly three percent in recent years. To accommodate this growth, some agricultural lands are being sold and converted to housing and commercial developments. Areas of arid desert habitat are also being developed. Growth and development further decreases agricultural and desert habitat in the analysis area and displaces wildlife species utilizing these habitats.

Resolution of the recoupment lawsuit in favor of the United States has the potential to decrease diversions at Derby Dam and increase flow in the lower Truckee River and into Pyramid Lake. Additional river flow would benefit fish species in both the Truckee river and Pyramid Lake, as well as on other species utilizing riparian and wetland habitat along the lower Truckee River. Decreased diversions into the Truckee Canal would negatively affect riparian and wetland habitat along the Newlands Project irrigation canals and drains, the Carson River, and around Lahontan Reservoir. It would also decrease the amount of inflow into the Lahontan Valley wetlands, adversely affecting the quantity and quality of wetlands habitat. It is unknown at this time if recoupment will occur or how it would be implemented, and its potential effects cannot be accurately quantified or predicted at this time.

The effects from these cumulative actions on river flows, habitat changes and conversion, and lake and reservoir surface elevation will depend on what combination of these actions occur and

the timing of their implementation. Due to the relatively small magnitude of effects expected from the alternatives analyzed in this EA, it is not expected that the effects of either alternative added to other potential actions would cause significant adverse cumulative effects to any fish or wildlife species or their habitat.

4.3 NEWLANDS PROJECT OPERATIONS AND INFRASTRUCTURE

Alternative 1 - No Action

Newlands Project Infrastructure

As the water right transfer and petition litigation is resolved under the No Action Alternative, the number of water-righted acres in the Newlands Project would increase by 3,772 acres as compared to current conditions. This increase is not expected to affect the Newlands Project infrastructure. At the same time the litigation is being resolved, water rights are being acquired and transferred by the FWS for the benefit of Lahontan Valley wetlands. Ultimately, the FWS action may result in the abandonment of some drains and canals as the irrigated agricultural land base in the Newlands Project decreases by approximately 21,000 acres, resulting in a reduced water demand for the agricultural areas.

Newlands Project OCAP

Under the 1997 Adjusted OCAP, as Carson Division demand decreases Lahontan Reservoir storage targets established would be reduced. One consequence of reduced Carson Division demand and lower Lahontan Reservoir storage targets is that diversions from the Truckee River would be somewhat reduced. Although decreased water use on the Project will tend to decrease Project efficiency, there will be no adverse impact on the Truckee River because the associated reduction in Lahontan Reservoir storage targets lowers the quantity of water diverted to the Newlands Project.

Even though Project efficiency is likely to be reduced, Newlands Project irrigators (who are penalized for failing to meet the efficiency requirement) are not expected to be significantly impacted. As Project water use decreases, the efficiency target is also reduced. Shortages in the Project, particularly in the Carson Division, are anticipated to be somewhat higher because increased demand in the Truckee Division would reduce the amount of Truckee River water available to the Carson Division.

Newlands Project Irrigated Acreage Base

As noted above, the number of water-righted acres is anticipated to increase by 3,772 acres with the No Action Alternative as Newlands Project water rights transfer and petition litigation is resolved. This increase in the number of water-righted agricultural acres is expected to be offset by a concurrent large decrease in water-righted agricultural acres as properties are acquired by FWS and water rights from those properties are transferred by the FWS to Lahontan Valley

wetlands. The socio-economic effects of the change in the agricultural land base are discussed under section 4.6 Socio-Economic Resources.

Newlands Project Efficiency

Changes in Newlands Project conveyance efficiency are a complex function of factors such as distance from diversion point to farm head gate, timing, frequency, routing, and distribution of water-righted deliveries relative to Lahontan Reservoir releases. As agricultural acreage increases due to resolution of transfer and petition water rights litigation, efficiencies would increase somewhat compared to current conditions. This increase is due to the fact that seepage rates in main canals would remain essentially unchanged while deliveries increased. Newlands Project efficiency would likely improve over time as the FWS water right acquisitions are completed. Consolidated wetland deliveries would reduce water losses due to evaporation, seepage, and wetting up requirements. In addition, efficiencies would increase through retirement of low-efficiency parcels and laterals.

Lahontan Reservoir Operations

Inflow

Lahontan Reservoir inflow consists of Carson River runoff and imports from the Truckee River via the Truckee Canal. Carson River runoff at Fort Churchill is estimated to be 289,800 acre-feet annually and would not change under the No Action Alternative. The average annual volume of water diverted from the Truckee River is estimated to increase by 22,500 acre-feet over current conditions as water rights transfer and petition litigation is resolved. This increase will be modified as the FWS wetlands water rights acquisition program is completed and ultimately result in an average annual Derby Dam diversion of 11,100 acre-feet more than current conditions. If canal losses are subtracted from Derby Dam diversions,, implementation of the No Action Alternative is expected to result in an increase if average annual inflow to Lahontan Reservoir from the Truckee Canal of 5,100 acre-feet greater than current conditions.

Outflows and Losses

Under the No Action Alternative releases and spills from Lahontan Reservoir are estimated to increase by 13,500 acre-feet per year from current conditions, primarily to serve the demands of additional water-righted acreage in the Project. This increase is anticipated to be modified by the FWS water rights acquisition program and is calculated to result in an overall annual increase of 4,000 acre-feet after the FWS water rights acquisitions are complete. Model results indicate that average annual outflow from Lahontan Reservoir would be 313,500 acre-feet with this alternative compared to current conditions of 309,500 acre-feet. Reservoir losses would increase from 35,300 acre-feet to 36,400 acre-feet per year, with most of the difference probably due to increased evaporation.

Storage

As water rights transfer and petition litigation is completed, average May through September storage levels in Lahontan Reservoir are expected to increase by 8,560 acre-feet under this alternative as compared to current conditions. Completion of the FWS wetlands water rights acquisition program will modify this increase, eventually resulting in an average increase of approximately 5,120 acre-feet per year over current conditions. This increase represents only three percent of the total average storage for these months under current conditions.

Alternative 2 - Proposed Action

Newlands Project Infrastructure

The Proposed Action is expected to result in an initial increase of 2,929 water-righted acres in the Newlands Project. This increase will be modified as the concurrent FWS water rights acquisition program is completed, and is ultimately expected to result in an overall decrease of approximately 21,000 water-righted agricultural acres. The initial increase from the A.B. 380 water rights acquisition program is not expected to affect the Newlands Project infrastructure. However, as water rights are acquired and transferred by FWS over time, some drains and canals within the Newlands Project may be abandoned.

Newlands Project Irrigated Acreage Base

With implementation of the Proposed Action, the number of irrigated agricultural acres is anticipated to increase by 2,929 acres, a total of 843 acres less than the 3,772-acre increase expected with the No Action Alternative. Under the A.B. 380 water rights acquisition program, acreage to be bought and retired was estimated for modeling purposes as 65 acres in the Truckee Division and 6,435 acres in the Carson Division. Over time, however, the overall agricultural land base in the Newlands Project would decrease by approximately 21,000 additional acres as the FWS wetlands water rights acquisition program is completed. The socio-economic effects of the change in the agricultural land base are discussed under section 4.6 Socio-Economic Resources.

Newlands Project Efficiency

Changes in Newlands Project conveyance efficiency are a complex function of factors such as distance from diversion point to farm head gate, timing, frequency, routing, and dispersal of water-righted deliveries relative to Lahontan Reservoir releases. As agricultural acres increase with implementation of the A.B. 380 water rights acquisition program, seepage rates in main canals would remain essentially unchanged while deliveries increased. Efficiencies would be slightly less under this alternative compared to the No Action Alternative due to the smaller number of water-righted acres anticipated with the Proposed Action. Newlands Project efficiency would likely improve over time as the FWS water right acquisitions are completed. This improvement would be due primarily to consolidated wetland deliveries which would reduce water losses from evaporation, seepage, and wetting up requirements.

Newlands Project OCAP

As Carson Division demand decreases, Lahontan Reservoir storage targets would be reduced in accordance with the 1997 Adjusted OCAP. One consequence of reduced Carson Division demand and lower Lahontan storage targets is that diversions from the Truckee River would be somewhat reduced. Although decreased water use on the Project will tend to decrease Project efficiency, there is no negative impact on the Truckee River because the associated reduction in Lahontan storage targets lowers the quantity of water diverted to the Newlands Project. There is likely very little impact on Newlands Project irrigators, who are penalized if the Project fails to meet the efficiency requirement. Although Project efficiency tends to decrease as Project water use decreases, the efficiency target is also reduced.

Lahontan Reservoir Operations

Inflow

As noted above, Lahontan Reservoir inflow consists of Carson River runoff and water diverted from Truckee River into the Truckee Canal. Carson River runoff is estimated to average 289,800 acre-feet annually and would not change under this alternative. With implementation of the Proposed Action, annual average diversions from the Truckee River would increase by an estimated 17,800 acre-feet over current conditions. As the FWS wetlands water rights acquisition program is completed, this increase would be modified and ultimately result in an overall annual average increase of 6,900 acre-feet over current condition compared to 11,100 acre-foot increase under the No Action Alternative. After subtracting for Truckee Canal losses, average annual inflow to Lahontan Reservoir from the Truckee Canal is estimated to be 50,600 acre-feet, compared to 60,800 acre-feet for the No Action Alternative.

Outflows and Losses

With the Proposed Action, releases and spills from Lahontan Reservoir are calculated to initially increase by 4,100 acre-feet per year compared to an initial increase of 13,500 acre-feet per year

under the No Action Alternative. The additional releases are due to the increased number of water-righted acres that result from implementation of either the Proposed Action or the No Action Alternative. With completion of the FWS water rights acquisition program, model results indicate average annual releases and spills from the reservoir would total 304,400 acre-feet for the Proposed Action compared to 313,500 acre-feet for the No Action Alternative.

Storage

With implementation of the Proposed Action, average May through September end-of-month storage levels in Lahontan Reservoir are expected to increase by 1,520 acre-feet compared to 8,560 acre-feet for the No Action Alternative. Completion of the FWS wetlands water rights acquisition program will modify this increase eventually resulting in an average end-of-month storage levels of approximately 6,280 acre-feet less than the volume expected with the No Action Alternative. This decline represents approximately 3.5 percent of the average volume of water stored in the reservoir during these months.

Cumulative Effects

Cumulative effects to Newlands Project operations and infrastructure are expected from numerous ongoing and reasonably foreseeable actions affecting the analysis area.

The Truckee River Operating Agreement (TROA) would modify operations of federal and non-federal reservoirs in the Truckee River basin. Negotiations on TROA have not yet been completed, but once a preliminary agreement is concluded this action will be analyzed in an Environmental Impact Statement. Until the EIS is completed, the effects of TROA cannot be accurately quantified.

The Water Quality Settlement Agreement (WQSA) calls for a combination of federal, state and local governments to spend $24 million to acquire Truckee River water rights. The agreement settles litigation and is expected to enhance Truckee River flows during normally low flow periods in the summer months to improve lower Truckee River water quality. A total of 9,000 to 12,000 acre-feet of Truckee River water rights are proposed to be acquired, with a majority of those water rights acquisitions expected from the Truckee Division of the Newlands Project. An Environmental Impact Statement is currently being prepared to analyze this action; if approved, this acquisition program would likely occur over a period of 10 or more years. The WQSA could result in abandonment of a large amount of the irrigation canals and drains in the Truckee Division of the Newlands Project; the Truckee Division currently comprises less than ten percent of the Newlands Project irrigated lands.

Churchill and Lyon counties, specifically the communities of Fallon and Fernley, have experienced an annual growth rate of nearly three percent in recent years. To accommodate this growth, some agricultural lands are being sold and converted to housing and commercial developments. This growth results in abandonment and/or relocation of some canals and drains in the Newlands Project.

Resolution of the recoupment lawsuit in favor of the United States has the potential to decrease diversions at Derby Dam and increase flow in the lower Truckee River and into Pyramid Lake. Additional Truckee River flow would benefit fish species in both the river and Pyramid Lake, as well as other species utilizing riparian and wetland habitat along the lower Truckee River. It is unknown at this time if recoupment will occur or how it would be implemented, and its potential effects cannot be accurately quantified or at this time.

Derby Dam infrastructure is expected to be affected by a proposed fish passage currently being analyzed in an Environmental Assessment. The proposed alternatives would allow construction of either a fish ladder or a riprap channel in the vicinity of the dam, as well as a flood bypass structure at the dam and a fish screen in the Truckee Canal. Automated gates on the dam are also part of the proposed project. None of this construction is expected to adversely affect Newlands Project operations.

The effects from these cumulative actions on Newlands Project operations and infrastructure will depend on what combination of these actions occur and the timing of their implementation. It is possible the Water Quality Settlement Agreement could result in closure of nearly all the canals and drains in the Truckee Division. Continued growth and development will contribute to the elimination of Project infrastructure in both the Carson Division and Truckee Division. These two cumulative projects could cause significant changes in the operations of the Newlands Projects. Adding the potential effects of the Proposed Action or the No Action Alternative to those impacts will not change the severity of those impacts.

4.4 WATER RESOURCES

Alternative 1 - No Action

Lower Truckee River Basin - Surface Water

Surface Water Supply

Under the No Action Alternative, an average of approximately 557,500 acre-feet of water would flow in the Truckee River above Derby Dam each year. This represents no change from current conditions. As water rights transfer and petition litigation is resolved over time, the quantity of water diverted from the Truckee River into the Truckee Canal with the No Action Alternative is estimated to increase to 116,600 acre-feet per year, compared to current average annual diversions of 94,100 acre-feet. As a result, annual inflow into Pyramid lake is expected to decrease from current conditions by approximately 22,300 acre-feet.

The volume of water diverted to the Truckee Canal will be modified with completion of the FWS water rights acquisition program, and ultimately result in an average annual diversion of 105,200 acre-feet. With this volume of diversion, average annual inflow to Pyramid Lake would be approximately 10,900 acre-feet less than under current conditions. This change represents

approximately two percent of the average annual inflow to Pyramid Lake, and is not expected to result in significant adverse impacts to the surface water supply of the lake.

Surface Water Quality

Compared to current conditions, the No Action Alternative is anticipated to result in a reduction in the total volume of Truckee River flow downstream from Derby Dam. This reduction in river flow will slightly affect the ability of the river to dilute pollutants and could result in a decrease in river water quality and the quality of water flowing into Pyramid Lake. However, since the reduction in flow is estimated to be only two percent of average annual flow, potential water quality changes are not anticipated to be significant for either the river or the lake.

Lower Truckee River Basin - Groundwater

Groundwater Supply

The No Action Alternative is expected to increase diversions to the Truckee Canal, and result in a slight reduction in annual average inflow to Pyramid Lake. As a consequence, groundwater recharge to aquifers in the lower Truckee River watershed downstream from Derby Dam could experience a slight reduction in the total volume of recharge. This change is not expected to be substantial because the reduction in Truckee River flows – the primary source of groundwater recharge water in this area – will be small in comparison to the annual average flow. Thus, the vast bulk of river flow is available to recharge local aquifers under current conditions will continue to be available with the No Action Alternative.

Seepage and leakage from the Truckee Canal could increase and cause some additional groundwater recharge along the canal route. The volume of water actually added to the groundwater is, however, expected to be very small. Even though the total volume of water in the canal would increase, the loss rate from seepage and leakage will remain stable once the wetted surface of the canal has been established to make irrigation deliveries to the head gates.

As noted above, completion of the FWS water rights acquisition program will modify the volume of water diverted into the canal, and ultimately result in an additional average annual diversion of approximately 11,100 acre-feet, as compared to 22,500 acre-feet with resolution of the litigation but without the acquisition program. This means that average annual flow in the lower river downstream from Derby Dam will still be reduced in comparison to current conditions, but this change is not expected to result in any significant change in the rate of groundwater recharge. The additional diversions amount to only two percent of average annual flows, and that reduction is not expected to result in a significant change in the rate or volume of groundwater recharge in the lower Truckee River basin.

Groundwater Quality

As noted above under this alternative, any change in the rate or volume of groundwater recharge in the lower river downstream from Derby Dam would be slight. Therefore, no significant

changes in groundwater quality conditions are expected with the No Action Alternative.

Lower Carson River Basin - Surface Water

Surface Water Supply

The No Action Alternative is anticipated to increase the surface water supply in the Lower Carson River Basin. Under current conditions, inflow to Lahontan Reservoir from the Truckee Canal averages 55,700 acre-feet per year, but as water rights transfer and petition litigation is resolved over time, the volume of water diverted from the Truckee River is estimated to increase by 15,300 acre-feet to an average of 71,000 acre-feet per year. That increase will be modified with completion of the FWS water rights acquisition program and will ultimately result in an average annual inflow into Lahontan Reservoir of 60,800 acre-feet, an increase of 5,100 acre-feet over current conditions.

Reservoir releases and spills into the Carson River are currently 309,500 acre-feet per year. Upon resolution of the water rights transfer and petition litigation, this amount is expected to increase by 13,500 acre-feet to 323,000 total acre-feet per year. When the FWS water rights acquisition program is completed, this increase will be modified and the average annual volume of reservoir releases and spills is estimated to be 313,500 acre-feet, an increase of 4,000 acre-feet per year from current conditions.

As compared to current conditions, total inflow into the Lahontan Valley wetlands as a result of resolution of the litigation under this alternative would increase by 3,300 acre-feet per year from 62,700 acre-feet to 66,000 acre-feet upon resolution of the water rights transfer and petition litigation. When the litigation is resolved and the FWS water rights acquisition program is complete, the quantity of inflow into the wetlands would be 114,300 acre-feet per year, an increase of 51,600 acre-feet per year over current conditions.

Aquatic organisms and habitat in the Lower Carson River Basin are expected to benefit from the additional inflow to Lahontan Reservoir, additional releases and spills from the reservoir, and additional inflow to the wetlands.

Surface Water Quality

The increased flow in the lower Carson River and into Lahontan Reservoir anticipated as part of the No Action Alternative will improve surface water quality conditions in the river and reservoir compared to current conditions, because the additional water will help dilute pollutants. However, the overall benefits to water quality conditions are expected to be small because the increase in flows are small compared to average annual flows into the reservoir and in the lower Carson River.

The estimated 3,300 acre-foot increase in flows to the Lahontan Valley wetlands would be composed entirely of drainwater from agricultural fields. Generally drainwater is of lower

quality than prime water. This lower quality water may slightly degrade water quality in the wetlands, but the change is not expected to be significant because the 3,300 acre-feet per year represents only five percent of the total inflow into the wetlands. In addition, upon resolution of the water rights transfer and petition litigation and completion of the FWS water rights acquisition program, the volume of inflow to the wetlands will eventually be 51,600 acre-feet per year more than under current conditions. Water quality in the wetlands would be significantly improved because nearly all of this amount is expected to be prime water.

Lower Carson River Basin - Groundwater

Groundwater Supply

Groundwater recharge in the vicinity of Lahontan Reservoir may increase slightly with the No Action Alternative simply because more water is anticipated to be diverted to and stored in the reservoir. As the volume of water stored in the reservoir is increased, more area is inundated offering more opportunities to recharge local aquifers. While local aquifers would benefit from additional storage in the reservoir, the magnitude of change is not expected to be significant because the additional diversion to the reservoir is calculated to be approximately 5,000 acre-feet per year, less than two percent of the total average annual inflow to Lahontan Reservoir. No impacts to the deep volcanic aquifers are expected as recharge of these aquifers does not appear to be directly linked to irrigation losses.

The shallow aquifer in the Fallon area and Lahontan Valley might receive some relatively small additional groundwater recharge upon resolution of water rights transfer and petition litigation as the number of water-righted acres is expected to increase by an estimated 3,772 acres with the No Action Alternative. Irrigating more land in the Newlands Project will increase opportunities for recharge of local aquifers.

Completion of the FWS water rights acquisition program will modify the number of water-righted agricultural acres and ultimately result in the elimination of up to 21,000 agricultural acres from the Project as compared to current conditions. An analysis completed by the FWS (1996) concluded this change in the number of agricultural acres is not expected to result in widespread impacts to groundwater levels in the shallow and intermediate aquifers because many existing canals would continue in operation even after the acquisition program was completed. The report did acknowledge that some individual domestic wells could be adversely affected.

A recent report by Herrera et al. (2000) describes the results of a model study to evaluate the effects of changing irrigation practices on the shallow aquifer in Lahontan Valley. The study concluded that the “model simulation’s indicate that groundwater levels and flows in the shallow aquifer will not be affected greatly unless water deliveries in canals are reduced”.

While the mechanism for recharging the basalt aquifer is not clear, available data suggest both the shallow and intermediate aquifers could be a water source for that aquifer. Thus, an activity

adversely affecting the shallow and intermediate aquifer may, with time, affect the basalt aquifer. As noted in the FWS environmental impact statement (1996), the wetlands water rights acquisition program has the potential to impact the basalt aquifer recharge. The impacts are not expected to be significant because the FWS anticipates many existing canals will remain in service and serve as a source for recharging local aquifers.

Groundwater Quality

The No Action Alternative will initially result in an increase in the quantity of water available to recharge local aquifers as a result of an anticipated increase in the number of water-righted acres in the Project. But overall, the FWS water rights acquisitions will modify that increase and result in a decrease in the total number of water-righted acres. This decrease in the number of water- righted acres will slightly improve groundwater quality. Herrera et al. (2000) reported that infiltration of water beneath irrigated fields accounts for approximately 60 percent of the salts added to the shallow aquifer. Reducing the number of irrigated fields will reduce the volume of salts added to local aquifers and improve groundwater quality.

Alternative 2 - Proposed Action

Lower Truckee River Basin - Surface Water

Surface Water Supply

Under the Proposed Action, as in the No Action Alternative, Truckee River flow below Derby Dam would average approximately 557,500 acre-feet annually. As water rights are acquired by the A.B. 380 acquisition program, the amount of water diverted from the river at Derby Dam would increase to an average of approximately 111,900 acre-feet per year; this amount is 4,700 acre-feet per year less than the volume diverted by the No Action Alternative.

Overall, with completion of the FWS water rights acquisition program, the average annual diversion at Derby Dam is estimated to be 101,000 acre-feet. This represents a seven percent increase from current conditions. However, compared to current conditions, both alternatives increase the volume of water diverted from the river and reduce the volume of water available downstream from Derby Dam. However, the volume of diversions anticipated for the Proposed Action is 4,200 acre-feet per year less than the No Action Alternative resulting in more water available downstream of Derby Dam. Correspondingly, Pyramid Lake inflow is expected to be approximately 4,100 acre-feet per year more under the Proposed Action Alternative than under the No Action Alternative.

Surface Water Quality

As noted above, Truckee River inflows to Pyramid Lake are expected to be higher overall for the Proposed Action than for the No Action Alternative. Compared to the No Action Alternative, the greater volume of inflow would allow for greater dilution of pollutants and should enhance water quality conditions in both the lower Truckee River and Pyramid Lake.

Lower Truckee River Basin - Groundwater

Groundwater Supply

Groundwater recharge in the lower Truckee River Basin is expected to be nearly the same under the Proposed Action Alternative as under the No Action Alternative. While the Proposed Action is overall expected to result in slightly more water (4,200 acre-feet per year) flowing in the Truckee River downstream from Derby Dam than the No Action Alternative, the difference between the alternatives is less than one percent of average annual river flow. This difference is it not likely to have a noticeable effect on groundwater recharge in the lower river basin.

Similarly, groundwater recharge along the Truckee Canal is expected to decrease slightly for both alternatives. Less water is diverted into the canal with the Proposed Action, but the difference between the two alternatives (4,200 acre-feet per year) represents just four percent of the average annual diversion, and is not expected to result in a significant change in the amount of water that seeps or leaks from the canal into local groundwater aquifers.

Groundwater Quality

As with groundwater supply, implementing the Proposed Action could result in a very slight benefit to groundwater quality compared to the No Action Alternative simply because a larger volume of Truckee River flow is anticipated with the Proposed Action. This additional flow would affect groundwater quality, but the difference in flow volume between the two alternatives is less than one percent of average annual flow, and thus is so small it is unlikely there will be a measurable difference in groundwater quality.

Groundwater quality in aquifers along the Truckee Canal is not expected to be adversely affected by the Proposed Action. While it is anticipated less water will be diverted into the canal compared to the No Action Alternative, the difference between the alternatives is approximately four percent of the average annual diversion. This small change is not expected to cause adverse effects to water quality of local groundwater aquifers.

Lower Carson River Basin - Surface Water

Surface Water Supply

Implementing the Proposed Action will not change the average annual Carson River inflow to Lahontan Reservoir. Compared to the No Action Alternative, however, completion of the A.B. 380 water rights acquisition program is expected to result overall in an estimated 10,200 acre-feet per year reduction of the Truckee Canal inflow to Lahontan Reservoir. This represents approximately three percent of the total average annual inflow to the reservoir. As a result, reservoir water surface elevations are anticipated to be slightly lower with the Proposed Action. However, the difference between the two alternatives is so small compared to average annual inflow that it is not expected to result in significant adverse effects.

The total volume of spills and releases from Lahontan Reservoir is also expected to be smaller for the Proposed Action than for the No Action Alternative. Overall, the average annual volume of reservoir releases and spills for the Proposed Action is estimated to be approximately 304,400 acre-feet compared with 313,500 acre-feet for the No Action Alternative. That difference is due almost entirely to differences in demand under the two alternatives. Model results indicate that the average annual demand for water at Lahontan Reservoir is approximately 8,470 acre-feet less for the Proposed Action than for the No Action Alternative. Only 630 acre-feet of the reduction in releases and spills under the proposed action is due to a reduction in spills. Thus, the difference between the alternatives is very small and not expected to result in significant adverse effects to downstream users.

In comparison to current conditions, both the Proposed Action and No Action Alternatives result in a substantial increase in the total water supply to the wetlands. The increase is smaller for the Proposed Action. Overall, total inflow to the Lahontan Valley wetlands for the Proposed Action is expected to average 2,900 acre-feet per year less than the volume of inflow estimated for the No Action Alternative. The difference is less than three percent of the total average annual inflow of 62,700 acre-feet to wetlands. Both alternatives are anticipated to result in the irrigation of more agricultural acreage than are irrigated under current conditions. The Proposed Action is estimated to result in 843 fewer water-righted acres than the No Action Alternative. This difference accounts for a substantial portion of the difference in wetlands inflow because fewer irrigated acres mean less drainwater is available for the wetlands. Overall, the difference between the two alternatives in wetlands inflow is not expected to result in significant adverse impacts to the quantity of wetlands acres or wetlands quality.

Surface Water Quality

Water quality conditions in Lahontan Reservoir and the lower Carson River are expected to be similar for both the Proposed Action and the No Action Alternative. The Proposed Action is anticipated to result in slightly lower water surface elevations in the reservoir and slightly less flow in the Carson River when compared to the No Action Alternative. However, these changes are small and are estimated to be approximately three percent of average annual inflow and three

percent of spills and releases. Differences of this magnitude are not likely to cause significant adverse impacts to reservoir or river water quality.

Overall, the Proposed Action is expected to result in a slightly reduced inflow to the wetlands, compared to the No Action Alternative. Once again, this reduction is a small percentage (2.6 percent) of the estimated total water supply for the wetlands. Even though less slightly less water is anticipated to be available to dilute pollutants entering the wetlands, the small reduction is not likely to result in significant adverse impacts to wetlands water quality.

If the Proposed Action is implemented, the quantity of pollutants entering the wetlands may be slightly less than with the No Action Alternative. Most of the additional flow (compared to current conditions) anticipated with both the Proposed Action and No Action Alternatives is expected to be from drainwater, and agricultural return flow is generally poorer water quality than prime water. Since the Proposed Action is expected to result in reduced return flows to the wetlands, the quantity of pollutants entering the wetlands could be slightly less than the with the No Action Alternative. Again, since the difference in inflow volumes between the alternatives is so small, this is not expected to be a significant benefit.

Lower Carson River Basin - Groundwater

Groundwater Supply

Under the Proposed Action Alternative, Truckee Canal inflow to Lahontan Reservoir is reduced approximately 10,200 acre-feet per year, which is the total volume of water potentially available to recharge groundwater aquifers in the vicinity of the reservoir is less than that available with the No Action Alternative. Overall, the difference in total inflow between the two alternatives is very small, just three percent of average annual inflow to the reservoir. This difference is not expected to result in a substantive difference in groundwater supply between the alternatives.

As noted above, the volume of water spilled and released from Lahontan Reservoir is expected to be approximately 9,100 acre-feet less per year than that spilled and released with the No Action Alternative. This represents less than three percent of average annual reservoir spills and releases from the reservoir. A smaller release volume means less water potentially available to recharge local groundwater aquifers downstream from Lahontan Dam in Lahontan Valley. Once again, the difference between the two alternatives is too small to result in significant differences in groundwater recharge. In both instances, the average volume of water estimated to be discharged from Lahontan Reservoir is in excess of 300,000 acre-feet per year. A reduction of approximately 9,100 acre-feet per year is not expected to adversely affect groundwater recharge in the Lahontan Valley.

Herrera et al. (2000) noted that groundwater levels and flows in the shallow aquifer would not be affected greatly by reduction in irrigated acreage unless water deliveries in canals are reduced. As water rights are acquired by the Proposed Action, some fields will no longer be irrigated and some canals in the Project may no longer be needed. In those areas where canals are unused,

groundwater levels could drop.

Overall, groundwater resources in Lahontan Valley are not expected to be adversely affected by the Proposed Action Alternative because the total number of irrigated water-righted acres in the Newlands Project is expected to increase when compared to current conditions. Additional water-righted acres are likely to mean that more acreage will be irrigated and more water will potentially be available to recharge local groundwater aquifers.

Groundwater Quality

With implementation of the Proposed Action, groundwater quality conditions are expected to be very similar to conditions anticipated with the No Action Alternative. Compared to the No Action Alternative, the Proposed Action is estimated to result in a slight reduction in the volume of water stored in Lahontan Reservoir, a slight reduction in the volume of water discharged from the reservoir, and less inflow to the wetlands. Overall, this means less surface water available to potentially influence groundwater quality. Model results indicate, however, the differences between the alternatives are very small particularly in the context of annual average releases and average annual inflows. Since the differences are anticipated to be small, they are not expected to result in significant differences in groundwater quality within the basin.

Cumulative Effects

A number of ongoing and reasonably foreseeable projects will likely affect water resources in the study area.

The TROA would modify operations of federal and non-federal reservoirs in the Truckee River basin. Among other benefits, these modifications are expected to enhance water storage efficiency in the reservoirs and improve management of the Truckee River water resources. Negotiations have not yet been completed, but once a preliminary agreement is concluded this action will be analyzed in an Environmental Impact Statement.

The Water Quality Settlement Agreement (WQSA) calls for a combination of federal, state and local governments to spend $24 million to acquire Truckee River water rights. The agreement settles litigation and is expected to enhance Truckee River flows during normally low periods in the summer months to improve water quality in the lower Truckee River. A total of 9,000 to 12,000 acre-feet of Truckee River water rights are proposed to be acquired, with a majority of those water rights acquisitions expected to be in the Truckee Division of the Newlands Project. An Environmental Impact Statement is currently being prepared to analyze this action; if approved this acquisition program would likely occur over a period of 10 or more years.

Both WQSA and TROA are expected to increase average annual flow in the Truckee River and increase inflow into Pyramid Lake. Additional Truckee River flow would increase groundwater recharge along the lower Truckee River and improve water quality in the river, adjacent groundwater aquifers, and Pyramid Lake.

If implemented, the WQSA would reduce the number of irrigated acres in the Truckee Division, the amount of water diverted to serve water rights in the Truckee Division, and the volume of water applied to fields in the Division. This action is ultimately expected to result in the closure of numerous distribution canals in the Division which could result in decreased groundwater recharge.

Churchill and Lyon counties, specifically the Fallon and Fernley areas, have experienced an annual growth rate of nearly three percent in recent years. To accommodate this growth, water-righted agricultural lands are being converted to residential and commercial developments. This means more water is needed for municipal and industrial purposes while agricultural water demand is decreasing. With less irrigation, the quantity of water available to recharge groundwater aquifers is reduced and the overall supply of groundwater could be diminished. Conversely, since infiltration of water beneath irrigated fields is a primary source of salts to the shallow groundwater aquifer, less irrigation means less contamination of groundwater supplies.

Resolution of the recoupment lawsuit in favor of the United States has the potential to decrease diversions at Derby Dam and increase flow in the lower Truckee River and into Pyramid Lake. Additional river flow would benefit surface and groundwater supplies and water quality in this area. Conversely, surface and groundwater supplies and water quality in the Lahontan Valley would be decreased due to the reduction in Truckee River diversions. It is unknown at this time if recoupment will occur or how it would be implemented, and its potential effects cannot be accurately quantified or predicted.

The effects from these cumulative actions on river flows, groundwater recharge, and water quality will depend on what combination of these actions occurs and the timing of their implementation. Due to the relatively small magnitude of effects anticipated from the alternatives analyzed in this EA, it is expected that the effects of either alternative added to other potential actions would not cause significant adverse cumulative effects to any water resources in the analysis area.

4.5 AIR QUALITY

As noted in Chapter 3, air quality in the analysis area is generally good; the area is in attainment for all six criteria pollutants with primary standards. Implementation of the two alternatives considered in this EA is not expected to result in violations of existing air quality standards or affect attainment status of the region. Some minor change in the concentration of inhalable particulates, Particulate Matter (PM_{10}), may occur. Potential effects to the atmospheric concentration of PM_{10} are related to the changes in the amount of actively irrigated land in the Newlands Project. No effects to air quality would occur from implementation of either alternative along the lower Truckee River corridor, Pyramid Lake or Lahontan Reservoir due to the lack of Newlands Project actively irrigated land in the vicinity.

Based on available information analyzed in this EA, no exceedences of State air quality

standards and no significant effects to air quality within the analysis area are expected to occur with implementation of either alternative.

Alternative 1 - No Action

Under the No Action Alternative the number of acres in the Newlands Project with active water rights is estimated to increase from the current condition by 6 percent upon resolution of the water rights transfer and petition litigation. The 6 percent represents a 3,772 acre increase of which 3,015 acres are assumed to be in the Carson Division and 757 acres in the Truckee Division. To assess potential air quality impacts, it is assumed that all 3,772 acres would become active irrigated agricultural land.

Some adverse direct effects to air quality would occur from increased air pollution resulting from routine agricultural practices on the additional 3,772 acres of active agricultural land. Sources of additional air pollutants include application of agricultural chemicals, hydrocarbon emissions from vehicles and machinery, soot and ash from agricultural burning, and fugitive dust created by farm equipment. As noted in Chapter 3, fugitive dust from agricultural practices currently accounts for approximately six percent of suspended atmospheric particulates measured in Churchill County.

While the concentration of particulates produced by agricultural practices can have periods of high intensity, the activities would generally be short term and localized. Pollution related to agricultural practices could increase by approximately six percent over existing conditions in the Newlands Project based on the expected percentage increase in number of irrigated agricultural acres under this alternative.

Some beneficial direct effects would occur to air quality with the conversion of open inactive acreage to active irrigated land. Fugitive dust from open ground would decrease somewhat in the Newlands Project in areas returned or converted to irrigated land. Wind-blown erosion and fugitive dust would be reduced due to small, localized increases in vegetative cover, reduction in the amount of bare soil, and irrigation wetting the soil. Depending on the type of crop planted, irrigated acreage generally has a higher percentage of vegetative cover per unit of area than non-irrigated lands.

During the period 1993 - 1998, the Nevada Division of Environmental Protection, Bureau of Air Quality reported a maximum 24-hour PM_{10} value of 111µg/m^3 and a maximum annual mean of 40 µg/m^3 for the Fallon reporting station. The Fernley reporting station recorded a maximum 24-hour value of 104 µg/m^3 and a maximum annual mean of 21 µg/m^3 from 1995 - 1998. The six percent increase in Newlands Project active acreage and pollution from agricultural practices is not expected to result in a violation of either the 24-hour standard (150 µg/m^3) or the average annual standard (50µg/m^3) as established by the State of Nevada and EPA. In addition, the reduction in open bare ground and related amounts of fugitive dust due to increased irrigated acreage would offset some of the air pollution resulting from increased agricultural practices. Thus, under this alternative the direct effects of increased agriculture on air quality parameters

are not expected to be significant in either the short or long-term.

The FWS water rights acquisition program is anticipated to acquire up to 21,000 acres of water-righted agricultural land in the Carson Division over a period of 20 years and transfer the water rights to local wetlands. Over time, this acquisition will substantially change the effects to air quality anticipated by the initial increase in 3,772 acres of active agricultural land discussed above. Transferring the water rights from agricultural lands to wetlands will reduce the number of irrigated agricultural acres in the Carson Division. Although the Fish and Wildlife Service has the authority to re-sell lands it acquires, many of the acquired acres are expected to remain vacant and will eventually revert back to desert. Compared to irrigated lands, desert lands are generally more prone to generate fugitive dust due to the reduced amount of existing vegetative cover.

Effects on air quality from the FWS water rights acquisition program will be moderated by several factors. Land that is no longer irrigated generally revegetates with native and non-native species within one year; root systems from previously irrigated parcels stay intact for a period of time and provide a soil anchor until other species take over. The expected length of time to complete the acquisitions will help moderate the severity of air quality impacts anticipated from these projects by gradually removing water rights from irrigated acres over a time period of 20+ years rather than instituting the immediate conversion of all acquired acres. In addition, at present most Fish and Wildlife Service acquisitions have been located east and slightly north of Fallon. The prevailing winds in the area blow from the southwest away from the main population center, which would reduce fugitive dust problems in the primary population area of Lahontan Valley.

Alternative 2 - Proposed Action

With implementation of the Proposed Action Alternative, the number of acres with active water rights in the Newlands Project is estimated to increase from the current conditions by approximately five percent; this represents a 2,929-acre increase of which 1,102 acres are assumed to be in the Carson Division and 1,827 acres in the Truckee Division. To assess potential air quality impacts, it is assumed that all 2,929 acres would become active irrigated land. The Proposed Action would have approximately 843 fewer active water-righted acres than the No Action Alternative. The active irrigated land under the Proposed Action Alternative represents an increase over current conditions of five percent; under the No Action Alternative the increase would be six percent. The difference between the two alternatives is thus only one percent as compared to current conditions.

The air quality pollutants produced from agricultural practices as a result of implementation of the Proposed Action are anticipated to be very similar to those described for the No Action Alternative, although the magnitude of impacts caused by those pollutants is expected to be slightly less. With 843 fewer acres returned or converted to active agriculture, the amount of farming and thus the quantity of air quality pollutants produced by those operations would be somewhat lower with this alternative. Conversely, with 843 fewer active acres, the amount of

fugitive dust from bare soil would be somewhat higher. Since the 843 acres represents only a one percent difference from the No Action Alternative, the variations in air quality between the two alternatives are not considered significant.

Upon completion of the FWS water rights acquisition program, the effects on air quality from this action would be similar to those described in the No Action Alternative, but with 843 less acres of agricultural land and associated impacts. Overall, the direct air quality impacts of this alternative will be very similar to those described for the No Action Alternative and are not expected to result in any significant impacts.

Cumulative Effects

Increases to PM_{10} concentrations are anticipated as a consequence of the cumulative effects of numerous ongoing or reasonably foreseeable activities that will decrease the number of irrigated acres in the Newlands Project.

The Water Quality Settlement Agreement calls for a combination of federal, state, and local governments to spend $24 million to acquire Truckee River water rights to settle litigation and enhance Truckee River flows in the summer months to improve water quality in the lower Truckee River. A total of 9,000 -12,000 acre-feet of Truckee River water rights would be acquired, with a majority of those water rights acquisitions expected to come from the Truckee Division of the Newlands Project. This acquisition program will reduce the number of irrigated agricultural acres in the Truckee Division, causing many of those acres to revert to desert, which will increase fugitive dust in the area.

Churchill and Lyon counties, specifically the Fallon and Fernley areas, have experienced an annual growth rate of nearly five percent in recent years. To accommodate this growth, agricultural lands are being sold and converted to housing and commercial developments. Conversion of the land requires mechanical disruption of the soil and can result in short term periods of intense releases of dust to the atmosphere during construction.

Resolution of the recoupment lawsuit in favor of the United States has the potential to decrease diversions at Derby Dam and the amount of water available for irrigation in the Newlands Project. It is unknown at this time if recoupment will occur or how it would be implemented, and its potential effects cannot be accurately quantified or predicted at this time. It is possible that recoupment could result in a lower quantity of productive agricultural acres which could in turn result in a small increase fugitive dust in the Newlands Project.

The overall cumulative impact of these various projects on the concentration of particulate matter in the atmosphere will be dependent on several factors, including the location of agricultural lands taken out of production, the ability of drought tolerant plant species to re-colonize the affected lands, and the rate of land acquisitions.

Cumulative effects to air quality from the various projects will be moderated by several factors.

Land that is no longer irrigated generally revegetates with native and non-native species within one year; root systems from previously irrigated parcels stay intact for a period of time and provide a soil anchor until other species take over. Some soil also becomes crusted over, reducing the amount of fugitive dust. Areas that are developed for housing or commercial uses usually result in high amounts of ground coverage which would reduce long-term dust problems. The length of time expected to complete the Water Quality Settlement Agreement water rights acquisition program (approximately ten or more years) will help moderate the severity of air quality impacts anticipated from these projects by gradually removing water rights from irrigated acres over ten years rather than instituting the immediate conversion of all acquired acres. Acquisitions located downwind from population centers will not reduce the amount of dust that may originate from those lands. However, this approach to land acquisition will help limit the effects on population centers to those periods when the wind blows from east to west.

The overall severity of the potential cumulative effects to PM_{10} values from the two alternatives is not expected to be significant, especially when considered in the context of the extremely large tract of desert surrounding the entire study area. As noted in Chapter 3, fugitive dust from desert land currently accounts for approximately 89 percent of suspended particulates recorded for Churchill County. The implementation of either alternative in combination with residential and commercial development and water rights acquisition programs will result in some additional particulate matter in the atmosphere, but the increased concentration of particulates is expected to be small in comparison to the dust that originates from the surrounding desert.

4.6 SOCIO-ECONOMIC RESOURCES

Alternative 1 – No Action

Population

This alternative is not expected to affect the projected population growth rate within the analysis area, the demand for community services or the existing social changes beyond what is presently occurring or projected to occur. Annual population growth rates in the analysis area are projected to increase at rates of more than 3 percent.

Economic Activity and Land Use

Current and projected land use patterns are not expected to change significantly under this alternative.
The number of irrigated acres (that is, active water-righted acreage) in the Newlands Project may, over time, increase from current levels by about 6 percent. As a result, the two sectors in the local economy that are anticipated to experience change, from current conditions, are the agricultural sector and the utility sector (hydroelectric power generation associated with Old Lahontan Power Plant, New Lahontan Power Plant, and the 26-foot Drop Power Plant). An additional 3,772 acres of potentially irrigable lands could be placed under cultivation, resulting in an increase in releases from Lahontan Dam to meet the additional water demand. These

releases are routed through the hydroelectric generation facilities noted above.

The direct economic effects are discussed below, under Agriculture and Hydropower Revenues sections. Collectively, the total impacts, which includes the direct, indirect, and induced effects[1], are estimated at $3.55 million (a 0.44 percent increase over current conditions), from the added acreage.

Employment and Income

Over time, about 60 part- and full-time jobs may be associated with this estimated increase in agricultural output. No employment changes are anticipated from changes in hydropower generation.

This estimate may be somewhat overstated, as the impact model used recognizes the change in output as the result of a block of additional acreage being placed into production. Realistically, while there may be economic gains realized from the sale of agricultural commodities resulting from additional cultivated acres, operators may not necessarily hire additional workers.

The potential personal income associated with the increase in agricultural and hydropower production is estimated to be as much as $600,000, an increase over current conditions of less than one percent.

This alternative is not expected to adversely impact any one income group or segment of society differently than any other.

Agriculture

Under this alternative, present and projected conditions would continue, unaffected, for the duration of time necessary to conclude the water rights transfer and petition litigation. Conditional upon the outcome of such litigation, affected Project water rights holders may or may not receive approval for the transfer of the contested water rights onto non-water-righted lands or the activation of currently inactive water rights. As a result, crop production may occur on those lands that are currently unirrigated.

Assuming that a percentage of the transfer applications will be granted, agricultural production in the area may increase. Should alfalfa production occur on the 3,772 additional acres of irrigated lands, economic output in the area may increase by as much as $1.6 million (@ 4.5 tons/acre and $98/ton). The increases in the productive acreage levels could occur over time, as the water rights protests and litigation are concluded. Over time, this potential increase in

[1]Direct effects are defined as changes in the productive level of the affected industry; indirect effects occur in the local business sector as a result of providing inputs to the affected industrial sector; and induced impacts refers to the economic activity caused by household consumption in a local economy from the direct and indirect effects.

irrigated acreage will be somewhat tempered as water rights are acquired by the U. S. Fish and Wildlife Service under the Public Law 101-618 water rights acquisition program.

For those water rights holders who are unsuccessful in the litigation associated with this action, TCID operating and maintenance assessments continue, without the opportunity to exercise use of the contested water right to irrigate land and produce agricultural crops. As a result, additional overall production expenses are incurred by the enterprise. Affected water rights holders may also incur legal fees throughout the litigation process and the cloud of uncertainty as to the outcome of decisions on these contested rights may last many years.

Recreation

Modeled end of month storage levels at Lahontan Reservoir, as a measure of recreation visitation levels, are as follows.

Table 4.2 Lahontan Reservoir End of Month Storage Levels for the No Action Alternative

	Current Conditions (000 acre-feet)	No Action Alternative (000 acre-feet)	Difference (000 acre-feet)
May	221.8	228.5	6.7
June	219.0	224.9	5.9
July	186.0	191.1	5.1
August	147.5	151.6	4.1
September	122.0	125.8	3.8

Recreation visitation at Lahontan Reservoir is directly correlated with reservoir storage levels (and weather). As illustrated in Table 4.2, reservoir storage levels increase slightly with the No Action Alternative and thus, recreation-related expenditures may also increase slightly from current levels. Analyzing data provided by the Nevada Division of Parks, fee collection revenues from Lahontan Reservoir recreation users, over the 5-month recreation season, may on average increase by slightly more than 2 percent over current conditions.

Measurable impacts on recreational activities at other sites in the analysis area are not anticipated. Over time, wetlands in the area could realize additional drain flows as the additional acreage is placed into production. If the wetlands acreage expands because of the additional drainwater flows, resulting wetlands-based recreation and related expenditures may increase accordingly.

Neither recreational activities at Pyramid Lake nor those associated with the Truckee River are

expected to be negatively impacted by this alternative. While there might be slight changes to flows in the Truckee River and water levels at Pyramid Lake, such changes will be negligible in terms of impacts to recreation use and visitation.

Recreation use at regulating reservoirs in the Carson Division of the Newlands Project will not be measurably affected by the No Action Alternative.

Hydropower Revenues

According to modeled results, hydropower revenues associated with electric power generation from the New Lahontan Power Plant are estimated to increase by about $30,000 annually, which represents a 3.25 percent increase over the revenues associated with current conditions. As water rights transfer and petition litigation is concluded and the Newlands Project water users win forty percent of the water right transfer and water right petition decisions and all water rights on the project are exercised, Carson Division water demands increase. Such releases from Lahontan Dam may be used for hydropower generation.

Revenues associated with the Old Lahontan and 26' Drop Power Plants were not calculated (purchase agreements are being negotiated). However, when compared to current conditions, aggregated production from these two plants was estimated to decline by 4 percent.

Alternative 2 – Proposed Action

The Bureau of Reclamation would receive $7 million (or more) in Congressionally-appropriated funds under this alternative. These funds (along with funds from other sources) will primarily be used to acquire, retire, and abandon 6,500 acres of water rights. Some funds will also be allocated to TCID to offset lost operating and maintenance costs associated with the retired program water rights.

Population

Implementation of the proposed A.B. 380 water rights purchase program is not expected to affect the population growth rate for the analysis area, nor will the demand for community services in the area be impacted. Annual population growth rates in the analysis area are expected to increase at the projected rate of 3 percent.

Economic Activity and Land Use

The proposed action is not expected to alter current or projected land use patterns.

Under the Proposed Action, the number of irrigated acres (that is, active water-righted acreage) in the Newlands Project is estimated to decrease from the No Action Alternative by an estimated 1.3 percent.

In a manner similar to the No Action Alternative, the two sectors in the local economy that are anticipated to experience change are the agricultural sector and the utility sector (hydroelectric power generation associated with the New Lahontan Power Plant). In contrast to the No Action Alternative, 844 fewer acres of potentially irrigable lands could be placed under cultivation under the Proposed Action.

The direct economic effects are discussed below, under Agriculture and Hydropower Revenues. Collectively, the total impacts associated with this alternative are estimated at $2.77 million. When compared to the No Action Alternative, the Proposed Action represents an estimated decrease of $780,000 (about 20 percent) in regional economic activity. This figure represents the direct, indirect, and induced effects (see footnote number 1 for a definition of these measures).

Employment and Income

Over time, about 45 part- and full-time jobs may be associated with this estimated increase in agricultural output, a reduction of 15 jobs when compared to the No Action Alternative. There are no job gains or losses associated with hydropower generation.

As was noted for the No Action Alternative, the estimated number of jobs estimate may be somewhat overstated. Realistically, while there may be economic gains realized from the sale of agricultural commodities resulting from additional cultivated acres, operators may not necessarily hire additional help.

The potential personal income associated with the increase in agricultural and hydropower production, over time, is estimated to be $417,000, representing a decrease of about $185,000 from the No Action Alternative.

This alternative is not expected to adversely impact any one income group or segment of society differently than any other.

Agriculture

Upon full build out of the A.B. 380 water rights acquisition program, the balance of the acreage associated with the challenged water rights transfer applications becomes potentially productive acreage.
Assuming that alfalfa production occurs on the 2,929 additional acres of irrigated lands, direct economic impacts to the area may increase by as much as $1.3 million over current conditions (@ 4.5 tons/acre and $98/ton), but are estimated to be $370,000 less when compared to the No Action Alternative. These increases in productive acreage levels could occur over a shorter period of time than under the No Action Alternative, assuming that the 6,500 acre cap is reached within several years of A.B. 380 program implementation. Over time, this potential increase in irrigated acreage will be somewhat tempered as water rights are acquired by the U. S. Fish and Wildlife Service water rights acquisition program authorized under the Public Law 101-618.

Operations and Maintenance charges paid by Newlands Project water rights owners to TCID would vary only to the extent TCID revises the O&M assessment for each irrigation season.

Recreation

Modeled end of month storage levels at Lahontan Reservoir, as a measure of recreation visitation levels, are as follows.

Table 4.3 Lahontan Reservoir End of Month Storage Levels for the Proposed Action

	No Action Alternative (000 acre-feet)	Proposed Action (000 acre-feet)	Difference between Proposed Action and No Action Alternative (000 acre-feet)
May	228.5	220.3	(8.2)
June	224.9	217.8	(7.1)
July	191.1	184.5	(6.6)
August	151.6	146.5	(5.1)
September	125.8	121.4	(4.4)

Lahontan Reservoir end-of-month storage levels estimated for the Proposed Action are slightly lower than those under the No Action Alternative. Over the 5-month recreation season, estimates of visitation levels are about 2.5 percent less, resulting in a decline in Lahontan Reservoir fee collections of about 2.6 percent on average over the season.

Neither recreational activities at Pyramid Lake nor those associated with the Truckee River are expected to be negatively impacted by actions associated with A.B. 380. While there might be slight changes to flows in the Truckee River and water levels at Pyramid Lake, such changes will be negligible in terms of impacts to recreation use and visitation.

Recreation use at regulating reservoirs in the Carson Division of the Newlands Project will not be measurably affected by the Proposed Action.

Hydropower Revenues

According to model results, total revenues collected from New Lahontan Power Plant hydroelectric power generation will decrease by $55,000 annually, when compared to the No Action Alternative.

Hydroelectric generation associated with the two other plants drops by slightly less than 4 percent from the No Action Alternative.

Despite an increase in the amount of irrigated acreage in the Carson Division from current conditions to the Proposed Action, Carson Division demand decreases due to lower headgate entitlement and higher efficiency associated with wetlands water transfers; thus, the drop in hydropower revenues.

Cumulative Effects

Impacts, both positive and negative, are anticipated as a consequence of the effects from either alternative combined with numerous ongoing or reasonably foreseeable activities that will decrease, or otherwise affect, the number of irrigated acres in the Newlands Project. The additional contribution from either the No Action Alternative or the Proposed Action is not expected to result in significant adverse economic impacts.

The Lahontan Valley Wetlands Water Rights Acquisition Program, in which the U.S. Fish and Wildlife Service and the State of Nevada are presently engaged, is anticipated to acquire up to 55,000 acres of water-righted agricultural land in the Carson Division. This program is expected to be occur over a 20-year period, during which time, acquired water rights will be transferred from agricultural lands to wetlands, thereby reducing the amount of irrigated agricultural acreage. As those lands and water rights are acquired and transferred, the regional economy will experience some impacts – mainly from the reductions in output from the various cultivated agricultural sectors and the potential increases in recreation and non-market benefits associated with wetlands restoration.

In addition, the Truckee River Water Quality Settlement Agreement calls for a combination of federal, state, and local governments to spend $24 million to acquire water rights in the Truckee River corridor. Between 9,000 and 12,000 acre-feet of Truckee River water rights could be acquired, with a majority of those acquisitions expected from lands in the Truckee Division of the Newlands Project. This program is expected to occur over a period of 10 or more years. As water rights are acquired and transferred from the irrigated acreage, agricultural production on those lands will cease. Recreation, both reservoir based and in-stream, may increase, resulting in an offsetting beneficial impact to the local and regional economy.

The United States has filed a lawsuit for the recoupment of over one million acre-feet of water that was allegedly illegally diverted to the Newlands Project from the Truckee River. While the court has not issued a ruling on the Recoupment lawsuit, one of two outcomes is likely. If recoupment is implemented as stipulated in the Federal government's motion to the court, the Newlands Project would be accountable for returning more than one million acre-feet of water to the Truckee River. Repayment may take several forms; the court may adopt the recoupment plan, as proposed by the Federal government or it may develop a modified plan. Alternatively, the court could rule that recoupment may not occur at all. Since there has not been a ruling, it is difficult to estimate the effects from the Recoupment lawsuit.

Churchill and Lyon Counties, particularly the Fernley and Fallon areas, have experienced, and will likely to continue to experience, population growth averaging 3 percent annually. Housing

and industrial/commercial centers will likely replace agriculture and as a result of this conversion, reduce agricultural production and thus, its contribution to the regional economy.

4.7 CULTURAL RESOURCES

Potential effects to cultural resources from implementation of the two alternatives could result from agricultural land conversions or from changes in surface water levels and flows in the vicinity of archaeological sites, including Newlands Project features listed or eligible for listing on the National Register of Historic Places. Effects from changes in water levels and flows may result from water erosion of sites in splash zones or from exposure of sites that could increase disturbance and illegal archaeological collections. High water flows can wash out sites or damage Newlands Project features. High water levels may inundate archaeological sites causing various detrimental effects such as erosion from wave action, decomposition of fragile textile material, and leaching. Higher water levels offer some protection to sites by eliminating vandalism opportunities. At sites where additional water increases natural vegetation, cultural resources may be hidden and provided some protection.

Overall, no significant adverse effects on cultural resources are expected from either alternative based on the small magnitude of change expected in surface flows in the rivers and water levels in Lahontan Reservoir, Lahontan Valley wetlands and Pyramid Lake.

Alternative 1 - No Action

Lahontan Valley

In comparison to current conditions, it is assumed that an additional 3,772 acres of land (3,015 acres in the Carson Division and 757 acres in the Truckee Division) will be brought into agricultural irrigation as a consequence of the No Action Alternative. It is expected these lands will occur in locations that have been previously disturbed, such as existing farm fields. It is unlikely that the active irrigation or associated agricultural practices would effect any cultural resources. Upon completion of the FWS water rights acquisition program, the amount of active agricultural acres would decrease by approximately 21,000 acres. The 21,000 acres is currently heavily disturbed from farming, and cultural resources are not expected to be located on these acres; therefore, the land conversion from agriculture to primarily desert land is not expected to impact any cultural resources.

The relatively small changes in average reservoir storage levels (May through December) under this alternative as compared to current conditions do not constitute a large enough change to impact archaeological sites that may be located along the reservoir perimeter. The average storage level would initially increase from 179,000 acre-feet to 187,000 acre-feet for these months. Upon completion of the FWS water acquisition program, the storage levels would be 184,000 acre-feet. Operation of the reservoir average storage levels under the No Action Alternative falls within the historic water levels, and no impacts to cultural resources are expected. Similarly, the initial 4 percent increase from current conditions in volume of releases

and spills from Lahontan Reservoir and 1.3 percent increase upon completion of the FWS water rights acquisition program will not result in a sufficient increase in flows in the Carson River to impact any archaeological resources that may occur along the river corridor. Carson River flows will be contained within the historic floodplain and no additional impacts to cultural resources are anticipated.

Under this alternative, flows to Lahontan Valley wetlands, including Newlands Project prime water supply, agricultural return flows, and Lahontan Reservoir spills delivered to the wetlands, would initially increase by 3,300 acre-feet per year under this alternative. Upon completion of the FWS water rights acquisition program, the flows to the wetlands would be 51,600 acre-feet per year. Higher water levels in the wetlands may inundate archaeological sites causing them through erosion, leaching and decomposition. However, archaeological sites in the wetlands have been covered with water many times before during naturally occurring periods of high water. Inundation through the increased amounts of water would eliminate the temptation of illicit artifact collecting. At sites within the wetlands where additional water increases natural vegetation, cultural resources and features may be provided additional protection by vegetation stabilizing soils and hiding surface displays.

Newlands Project

Under the No Action Alternative, the small changes in water levels in the in Lahontan Reservoir and the Carson River and the estimated increase from current conditions of water diverted into the Truckee Canal would have no impact on the various features of the Newlands Project listed or considered eligible for listing on the National Register of Historic Places. The capacity of the existing irrigation system is sufficient to handle these changes without any deleterious effects.

Lower Truckee River from Derby Dam to Pyramid Lake

Under the No Action Alternative, upon resolution of the water rights transfer and petition litigation diversions from the Truckee River into the Truckee Canal would increase by 22,500 acre-feet per year from current conditions; the increase from current conditions would be 11,100 acre-feet per year upon completion of the FWS water rights acquisition program. This increased diversion results in a calculated annual decrease in Truckee River flows below Derby Dam of 22,300 acre-feet from resolution of the litigation. The decrease in river flows would be 10,900 acre-feet upon completion of the FWS water rights acquisition program. As a result of the decreased inflows, the surface elevation of Pyramid Lake will be decreased by 4.6 feet from its current level over a 95-year period. No impacts are anticipated for cultural resources in the Truckee River since this change falls within the normal riverine floodplain. Little to no effects to cultural resources around the perimeter of Pyramid Lake are expected since the exposed area is small and this portion of the basin has experienced repeated covering and exposure over time.

Alternative 2 - Proposed Action

Overall, the direct and cumulative effects of this alternative are very similar to those described

for the No Action Alternative and are not expected to result in any adverse impacts to cultural resources.

Lahontan Valley and Lower Truckee River from Derby Dam to Pyramid Lake

In comparison to the No Action Alternative, under implementation of A.B. 380, average storage levels in Lahontan Reservoir for May through September would be 7,000 acre-feet per year lower. Upon completion of the FWS water acquisition program, the average storage would be 6,300 acre-feet per year lower than under the No Action Alternative. Reservoir releases and spills would be 9,400 acre-feet per year lower than under the No Action Alternative. Upon completion of the FWS water rights acquisition program, releases and spills would be 9,100 acre-feet lower than the No Action Alternative. Flows to the Lahontan Valley wetlands would increase 2,400 acre-feet per year less than would occur under the No Action Alternative; flows would be 2,900 acre-feet lower upon completion of the FWS water rights acquisition program. Diversions from the Truckee River into the Truckee Canal would be 4,700 acre-feet lower under this alternative than under the No Action Alternative; upon completion of the FWS water acquisition program, diversions would be 4,200 acre-feet less than would occur under the No Action Alternative. Inflow from the Truckee River into Pyramid Lake would be 4,800 acre-feet higher than would occur under the No Action Alternative; upon completion of the FWS water rights acquisition program flows into Pyramid Lake would be 4,100 acre-feet higher than would occur under the No Action Alternative. Surface water elevation at Pyramid Lake would be 2.1 feet higher over a 95-year period upon completion of all actions under the Proposed Action Alternative.

The difference between this alternative and the No Action Alternative in the resulting water levels of Lahontan Reservoir, Lahontan Valley wetlands and Pyramid Lake, as well as flows in the Carson and Truckee rivers between this alternative and the No Action Alternative are not considered significant as related to potential impacts on cultural resources within the analysis area. Any impacts to cultural resources are considered minor when considering the great variations in water levels and flows that commonly occur in the analysis area.

Under this alternative the amount of land with active water rights in the Newlands Project is estimated to increase by approximately 5 percent (2,929 acres) over current conditions. In comparison to the No Action Alternative, the Proposed Action Alternative would convert a total of 843 fewer acres to agriculture, reducing the amount of potential disturbance to archaeological sites that might be in the area.

Newlands Project

Given the expected scattered pattern of water rights acquisitions under A.B. 380, it is unlikely that there will be significant adverse impacts to the irrigation canals and drains, elements, or components of the Newlands Project listed on the National Register of Historic Places. It is not expected that any canals, laterals, or drains will be decommissioned as a result of this action.

Cumulative Effects

Numerous ongoing and reasonably foreseeable actions occur within the analysis area that could potentially affect cultural resources. Major actions include residential and commercial development, resource extractions, water rights acquisitions and land conversions. Federal actions require the effect on cultural resources to be evaluated, and all actions must comply with the regulations for Section 106 of the National Historic Preservation Act.

Water levels in Lahontan Reservoir, Lahontan Valley Wetlands, and Pyramid Lake, as well as flows in the Carson and Truckee rivers, vary from year to year dependent upon annual snowfall and spring runoff as well as variations in the operations of dams and reservoirs. This historic variation in water levels and flows can disturb cultural resources in these locations. The very small water level and flow changes anticipated under both alternatives combined with the effects of existing and projected actions are not expected to have a significant impact on cultural resources in the analysis area. Wide water level variations in the analysis area are expected to continue.

4.8 INDIAN TRUST ASSETS

As noted in Chapter 3, trust assets of the two tribes located in the analysis area include land, water rights, fish and wildlife, and incomes derived from these assets. None of these assets are expected to experience any significant adverse effects from implementation of either alternative. Potential effects to socio-economic and cultural resources, fish, wildlife, and threatened and endangered species are analyzed under those section headings in this chapter.

The primary trust assets that could be affected by the alternatives in this EA are the volume of flow in the Truckee River, the elevation of Pyramid Lake and the effects on fish and wildlife that utilize these aquatic habitats.

Alternative 1 - No Action

Implementation of this alternative is not expected to have any effect on the trust assets of the Fallon Paiute-Shoshone Tribe. There would be no changes from current conditions for land, water rights, wetlands, and fish and wildlife. No change is anticipated in the amount of agricultural land or amount of water delivered to the Fallon Paiute-Shoshone Indian Reservation.

Implementation of the No Action Alternative would result in a 22,500 acre-foot per year increase in Truckee River diversions over current conditions and a 22,500 acre-foot decrease in flows to Pyramid Lake. The decreased flows to the lake would lower the lake level by 9.5 feet over a 95-year period. At the time of completion of the FWS water rights acquisitions, model results indicate diversions from the Truckee River into the Truckee Canal would increase by approximately 11,100 acre-feet per year, an 11.8 percent increase from current conditions. Inflow to Pyramid Lake would decrease by about 10,900 acre-feet per year, a 2.3 percent decrease from current conditions, and over time, the surface elevation of the lake would decrease by approximately 4.6 feet.

Under the No Action Alternative, it is estimated that the Pyramid Lake Paiute Tribe would prevail in 60 percent of the current water rights transfer and petition litigation related to protested and petitioned water-righted land in the Newlands Project. The 60 percent would result in as much as approximately 5,657 acres of water rights being permanently abandoned and retired as a result of the Tribe winning the litigation. This would insure that water associated with these water rights would never be diverted from the Truckee River, thus benefiting Pyramid Lake and the trust assets of the Pyramid Lake Paiute Tribe.

Alternative 2 - Proposed Action

Water rights acquired and retired under A.B. 380 are not expected to have any effects on the Fallon Paiute-Shoshone Tribe. There would be no change in the amount of water delivered to the Fallon Paiute-Shoshone Reservation or agricultural acreage on the reservation.

Model results indicate diversions from the Truckee River into the Truckee Canal under the Proposed Action Alternative would be 4,700 acre-feet per year less than under the No Action Alternative. Upon completion of the FWS water acquisition program, the diversion would be 4,200 acre-feet per year less than would occur under the No Action Alternative.

The resulting inflow to Pyramid Lake would be 4,800 acre-feet more under this alternative than under the No Action Alternative and 4,100 acre-feet more than under the No Action Alternative upon completion of the FWS water rights acquisition program. Over a 95-year period, surface elevation of Pyramid Lake would be 2.1 feet higher under the Proposed Action Alternative than under the No Action Alternative.

The Proposed Action Alternative is more beneficial to the trust assets of the Pyramid Lake

Paiute Tribe than the No Action Alternative because there would be less diversions from the Truckee River, higher inflows into Pyramid Lake and higher lake elevation. All these factors positively influence the fisheries of Pyramid Lake and the Lower Truckee River.

Under the Proposed Action Alternative, 6,500 acres of water rights in the Newlands Project would be acquired and permanently abandoned and retired. Overall, 843 more acres of water rights would be permanently retired and abandoned compared to the No Action Alternative. Water associated with these water rights would never be diverted from the Truckee River thus benefiting Pyramid Lake and the trust assets of the Pyramid Lake Paiute Tribe.

Cumulative Effects

No effects are expected from either alternative to the trust assets of the Fallon Paiute-Shoshone Tribe; therefore, neither alternative will contribute to any cumulative effects that may occur under other foreseeable actions within the analysis area.

Several additional actions that could potentially affect annual inflow to Pyramid Lake (e.g., TROA, ongoing litigation over Newlands Project Water Rights, and WQSA Water Rights Acquisition Program) are ongoing or proposed. The outcome of these actions and their effect on Pyramid Lake are uncertain at this time and can not be fully assessed. In general, some of these actions are likely to increase average Truckee River flow, thereby increasing inflow to Pyramid Lake. Some actions could result in a decrease in average river flow and would result in a decline in the surface elevation of Pyramid Lake. The effects on river flow and lake surface elevation will depend on what combination of events occurs. Regardless of which of these events eventually occurs, the small amount of change to Truckee River flow and Pyramid Lake surface elevation anticipated to result from both of these alternatives is not expected to result in significant cumulative effects to the trust assets of the Pyramid Lake Paiute Tribe.

4.9 ENVIRONMENTAL JUSTICE

Alternative 1 - No Action

There would be no direct, indirect or cumulative effects under Environmental Justice as a result of this alternative. This alternative does not involve facility construction, population relocation, health hazards, hazardous waste, property takings, or substantial economic impacts (see section 4.8 Socio-Economic Resources). The No Action alternative does not have significant adverse human health or environmental effects as defined by environmental justice policies and directives.

Alternative 2 - Proposed Action

There would be no direct, indirect or cumulative effects under Environmental Justice as a result of the proposed action. As part of the A.B. 380 decision making process, public involvement coordination and Indian Trust Asset consultation with potentially affected publics was

accomplished (see Chapter 1 section 1.8 Consultation and Coordination). The A.B. 380 water rights acquisition and retirement program does not involve facility construction, population relocation, health hazards, hazardous waste, property takings, or substantial economic impacts (see section 4.8 Socio-Economic Resources). The A.B. 380 program does not have significant adverse human health or environmental effects as defined by environmental justice policies and directives.

Cumulative Effects

No effects to Environmental Justice will occur under either alternative; therefore, the alternatives will not contribute to any cumulative effects that may occur under other foreseeable actions within the analysis area.

CHAPTER 5

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APPENDIX A

Assembly Bill 380

http://www.leg.state.nv.us/70th/Bills/AB/AB380_EN.html

Assembly Bill No. 380–Committee on Natural Resources, Agriculture, and Mining

CHAPTER.....

AN ACT relating to water; revising the provisions establishing the priority of certain water rights; providing that certain evidence may be considered to show whether a water right has been abandoned; declaring that certain water rights are not subject to a determination of abandonment; clarifying the circumstances under which water becomes appurtenant to land; providing that certain surface water rights are not subject to forfeiture for failure to use water pursuant to that right within a certain period; establishing the Newlands Project Water Rights Fund and a related program for the acquisition of certain surface water rights; making an appropriation; and providing other matters properly relating thereto.

THE PEOPLE OF THE STATE OF NEVADA, REPRESENTED IN SENATE AND ASSEMBLY, DO ENACT AS FOLLOWS:

Section 1. Chapter 533 of NRS is hereby amended by adding thereto a new section to read as follows:

1. The priority of a water right acquired by a person for use in a federal reclamation project is determined according to the date on which the United States appropriated water for initiation of the project. Notwithstanding the fact that the water right so appropriated and acquired may ultimately vest in the name of the person at a later date, all such water rights so acquired are governed by the applicable law of this state in effect on the date on which the United States appropriated water for initiation of the project, unless the water rights vested under the law in this state before the time the United States first appropriated or otherwise acquired the water for initiation of the project. If the water right vested under the law in this state before appropriation or acquisition by the United States, the date of initiation of the water right is determined according to the date on which the water was first diverted under that appropriation or acquisition by the United States.

2. No water rights, in addition to those allocated under applicable court decrees, are granted, stated or implied by the determination of the date of priority pursuant to subsection 1.

1. **Sec. 2. NRS 533.040 is hereby amended to read as follows:**
1.533.040 ~~[All]~~
1. 1. ***Except as otherwise provided in this section, any*** water used in this
1. state for beneficial purposes shall be deemed to remain appurtenant to the
1. place of use **. ~~[; provided:~~**
~~1.1. That if for any reason it should]~~
1. 2. If at any time **~~[become]~~** ***it is*** impracticable to use water beneficially
1. or economically at the place to which it is appurtenant, the right may be

1. severed from ~~[such]~~ ***the*** place of use and ***be*** simultaneously transferred and
1. become appurtenant to ~~[other place or places]~~ ***another place*** of use, in the
2. manner provided in this chapter, ~~[and not otherwise,]~~ without losing
1. priority of right ~~. [heretofore established; and~~
~~1. 2. That the]~~
1. 3. The provisions of this section ~~[shall]~~ ***do*** not apply ~~[in cases of]~~ ***to a***
1. ditch or canal ~~[companies which have appropriated~~] ***company that***
1. appropriates water for diversion and transmission to the lands of private
1. persons ~~[at]~~ ***for*** an annual charge.

4. For the purposes of this section, a surface water right acquired by a water user in a federal reclamation project may be considered appurtenant to an entire farm, instead of specifically identifiable land within that farm, upon the granting of a permit for the change of place of use by the state engineer which designates the place of use as the entire farm. The quantity of water available for use on that farm must not exceed the total amount determined by applicable decrees as designated in the permit granted by the state engineer.

1. 5. As used in this section, "farm" means a tract of land under the
1. same ownership that is primarily used for agricultural purposes.

Sec. 3. NRS 533.060 is hereby amended to read as follows:

1.533.060 1. Rights to the use of water ~~[shall]~~ ***must*** be limited and
1.restricted to ~~[so much thereof]~~ ***as much*** as may be necessary, when
1.reasonably and economically used for irrigation and other beneficial
1.purposes, irrespective of the carrying capacity of the ditch. ~~[All the]~~ ***The***
1.balance of the water not so appropriated ~~[shall]~~ ***must*** be allowed to flow in
1.the natural stream from which ~~[such]~~ ***the*** ditch draws its supply of water,
1.and ~~[shall]~~ ***must*** not be considered as having been appropriated thereby.
1. 2. ~~[Except as otherwise provided in subsection 4, if the owner or~~
~~1. owners of any such ditch, canal, reservoir, or any other means of diverting~~
~~1. any of the public water fail to use the water therefrom or thereby for~~
~~1. beneficial purposes for which the right of use exists during any 5 successive~~
~~1. years, the right to so use shall be deemed as having been abandoned, and~~
~~1. any such owner or owners thereupon forfeit all water rights, easements and~~
~~1. privileges appurtenant thereto theretofore acquired, and all the water so~~
~~1. formerly appropriated by such owner or owners and their predecessors in~~
~~1. interest may be again appropriated for beneficial use the same as if such~~
~~1. ditch, canal, reservoir or other means of diversion had never been~~
~~1. constructed, and any qualified person may appropriate any such water for~~
~~1. beneficial use.~~

~~3. No] Rights to the use of surface water shall not be deemed to be lost or otherwise forfeited for the failure to use the water therefrom for a beneficial purpose.~~

3. A surface water right that is appurtenant to land formerly used primarily for agricultural purposes is not subject to a determination of abandonment if the surface water right:
(a) Is appurtenant to land that has been converted to urban use; or
(b) Has been dedicated to or acquired by a water purveyor, public utility or public body for municipal use.

4. In a determination of whether a right to use surface water has been abandoned, a presumption that the right to use the surface water has not been abandoned is created upon the submission of records, photographs, receipts, contracts, affidavits or any other proof of the occurrence of any of the following events or actions within a 10-year period immediately preceding any claim that the right to use the water has been abandoned:
(a) The delivery of water;
(b) The payment of any costs of maintenance and other operational costs incurred in delivering the water;
(c) The payment of any costs for capital improvements, including works of diversion and irrigation; or

1.(d) The actual performance of maintenance related to the delivery of
1. the water.
1.5. A prescriptive right to the use of ~~**[such]**~~ ***the*** water or any of the
1. public water appropriated or unappropriated ~~**[can]**~~ ***may not*** be acquired by
~~**1. [adverse user or]**~~ adverse possession . ~~**[for any period of time whatsoever,**~~
~~**1. but any]**~~ ***Any*** such right to appropriate any of ~~**[such water shall]**~~ ***the water***
1. must be initiated by ~~**[first making application]**~~ ***applying*** to the state
1. engineer for a permit to appropriate the ~~**[same]**~~ ***water*** as provided in this
1. chapter . ~~**[and not otherwise.]**~~
1. ~~**[4.]**~~ ***6.*** The State of Nevada reserves for its own present and future use
1. all rights to the use and diversion of water acquired pursuant to chapter
1. 462, Statutes of Nevada 1963, or otherwise existing within the watersheds
1. of Marlette Lake, Franktown Creek and Hobart Creek and not lawfully
1. appropriated on April 26, 1963, by any person other than the Marlette Lake
1. Company. **[No such right may]** ***Such a right must not*** be appropriated by
1. any person without the express consent of the legislature.

Sec. 4. 1. There is hereby appropriated from the state general fund to the Newlands Project Water Rights Fund, created by section 5 of this act, the sum of $3,300,000 as the state's contribution to the fund for the protection and preservation of the natural resources of this state. All interest generated from this appropriation accrues to the benefit of the Newlands Project Water Rights Fund.

2. The Carson Water Subconservancy District shall not commit for expenditure any amount of the appropriation made by subsection 1 until the District determines that:
(a) There is and will continue to be substantial compliance with the "Joint Testimony of Truckee-Carson Irrigation District, Pyramid Lake Paiute Tribe of Indians, City of Fallon, Churchill County and Sierra Pacific Power Company," dated by the parties thereto on May 6,

1999, and submitted to a hearing of the Senate Standing Committee on Finance on May 24, 1999; and

(b) The City of Fallon and Churchill County have withdrawn all administrative protests and have sought to dismiss all legal actions initiated by the city and county, respectively, relating to applications for changes in the point of diversion, place of use or manner of use of water rights pending before the State Engineer on the effective date of this act as required by that joint testimony.

3. The Carson Water Subconservancy District shall not commit for expenditure during the next biennium more than $1,600,000 of the appropriation made by subsection 1.

4. Any remaining balance of the appropriation made by subsection 1 must not be committed for expenditure after June 30, 2004, and reverts to the state general fund as soon as all payments of money committed have been made.

Sec. 5. 1. The legislature hereby finds and declares that a general law cannot be made applicable to the purposes, objects, powers, rights, privileges, liabilities and duties provided in this section because of the number of atypical factors and special conditions relating thereto.

2. The Newlands Project Water Rights Fund is hereby established to be administered by the Carson Water Subconservancy District. The money in the fund may only be used:

(a) For the support of the program established pursuant to subsection 4; and

(b) To provide for the payment of an amount to offset revenue from operation and maintenance charges lost as a result of water rights retired and abandoned pursuant to the program.

3. The District may accept gifts and grants for deposit in the Fund and shall make every effort to secure money for the Fund from:

(a) The Federal Government;

(b) The State of Nevada;

(c) Sierra Pacific Power Company or its affiliates;

(d) Carson Water Subconservancy District;

(e) Carson-Truckee Water Conservancy District; and

(f) Any other interested parties.

4. The Carson Water Subconservancy District shall establish a program for the acquisition of surface water rights to assist in the resolution of legal and administrative challenges in existence on April 1, 1999, regarding water rights for the Newlands Reclamation Project. The District shall:

(a) Adopt criteria for the administration of the program, including, without limitation, criteria to determine the fair market value of the water rights to be acquired;

(b) Acquire surface water rights appurtenant to not more than 6,500 acres of land in the Newlands Reclamation Project at an amount not to exceed the fair market value of the water rights;

(c) Acquire these water rights from willing sellers with the execution of a suitable binding contract for sale in which the seller acknowledges that, upon completion of the sale:
   (1) His right to the water sold is retired and deemed abandoned; and
   (2) He waives any right to claim further compensation for the water rights so acquired by the District;

(d) Retain reasonable fees for the administration or operation of the program;

(e) To the extent that legal and administrative challenges in existence on April 1, 1999, result in a final determination that all or any portion of a surface water right appurtenant to land in the Newlands Reclamation Project has been forfeited or abandoned:
(1) Pay to the party who procured that final determination an amount equal to the amount that would have been paid to acquire the water right pursuant to the program; and
(2) Consider the forfeited or abandoned water right as having been acquired pursuant to the program; and
1.(f) Complete an annual report on the program and make it available for
1. public review.

Sec. 6. The 71st regular session of the Nevada Legislature shall review the manner in which the appropriation made by section 4 of this act has been expended and determine whether there has been substantial compliance with the "Joint Testimony of Truckee-Carson Irrigation District, Pyramid Lake Paiute Tribe of Indians, City of Fallon, Churchill County and Sierra Pacific Power Company," dated by the parties thereto on May 6, 1999, and submitted to a hearing of the Senate Standing Committee on Finance on May 24, 1999.

Sec. 7. The amendatory provisions of sections 1, 2 and 3 of this act:
1. Do not apply to water rights that are under challenge in any legal or administrative proceeding which is pending on or before April 1, 1999; and
1.2. Do not constitute a legislative declaration that the law to be applied
1. in any such pending proceeding is different from or the same as set forth in
1. this act.

Sec. 8. 1. This act becomes effective upon passage and approval.
1. 2. Section 5 of this act expires by limitation on July 1, 2004.
1.
1.~

APPENDIX B

Joint Testimony of Truckee-Carson Irrigation District, Pyramid Lake Paiute Tribe of Indians, City of Fallon, Churchill County and Sierra Pacific Power Company

Before
Senate Committee on Natural Resources

Concerning Assembly Bill 380

I. INTRODUCTION.

This testimony is submitted on behalf of the Truckee-Carson Irrigation District, Pyramid Lake Paiute Tribe of Indians, City of Fallon, Churchill County, and Sierra Pacific Power Company. It is intended to provide background information to explain the purposes of A.B. 380 and to acknowledge the commitments and agreements which allow these entities to support, endorse and recommend enactment of A.B. 380.

II. BACKGROUND.

In 1980, the final decree was entered in *United States of America, Plaintiff v. Alpine Land and Reservoir Co., et al., Defendants*, Civil No. D-183 (D. Nev.) (the "Alpine Decree"). Paragraph VII of its Administrative Provisions provides that applications for changes in the place of diversion, place of use or manner of use as to Nevada water rights adjudicated by the Alpine Decree are to be directed to the Nevada State Engineer. Persons aggrieved by an order or decision of the State Engineer may appeal to the Alpine Court. Alpine Decree at 161. The application of these change provisions to the Newlands Reclamation Project was found valid and was affirmed in *United States of America v. Alpine Land and Reservoir Co.*, 697 F.2d 851 (9th Cir.), *cert. denied*, 464 U.S. 863 (1983) ("Alpine I").

After the decision in Alpine I and beginning in 1984, several groups of applications to change the place of use of Newlands Project water rights were filed with the State Engineer. The first three groups involved 129 change applications. Most of those 129 change applications were timely protested by the Pyramid Lake Paiute Tribe of Indians (the "Tribe"). With respect to 25 of the 129 change applications, the Tribe included as additional protest grounds the assertion that the applications involved the transfer of water rights which had been abandoned or forfeited. *See, United States v. Alpine Land and Reservoir Co.*, 878 F.2d 1217, 1219 (9th Cir. 1988) ("Alpine II"). Since the filing of the first three groups of change applications, numerous additional change applications have been filed, involving water rights in Fernley and in the Lahontan Valley. All of those applications were protested based upon forfeiture and

abandonment. The United States was allowed to intervene as an "unaligned" party to protect federal interests with respect to Lahontan Valley water rights and is a protestant with respect to certain Town of Fernley water rights. *See*, Nevada State Engineer's Ruling No. 3241 (Sept. 30, 1985).

Those Newlands Project change applications and the protests to them have resulted in three decisions by the United States District Court for the District of Nevada, two decisions by the Court of Appeals for the Ninth Circuit and weeks of hearings before the State Engineer all spanning over fourteen years. A definitive final outcome has not yet been achieved. The decisions of the Court of Appeals in *United States v. Alpine Land and Reservoir Co.*, 983 F.2d 1487 (9th Cir. 1993) ("Alpine III"), in Alpine II and in *United States v. Alpine Land and Reservoir Co.*, 27 F. Supp. 2d 1230 (D. Nev. 1998), provided interpretations of Nevada law concerning forfeiture and abandonment. Some parties, including the Nevada State Engineer, have disagreed with those interpretations. *See*, Nevada State Engineer's Ruling on Remand No. 4591 at 9-10; 38 (Dec. 22, 1997).

In addition, in April, 1993, the Tribe filed a *Petition to Declare that Certain Claimed Water Rights within the Truckee Division of the Newlands Reclamation Project Do Not Exist under the Orr Ditch Decree* (the "Orr Ditch Petition"). On that same day, the Tribe also filed a *Petition to Declare that Certain Claimed Water Rights within the Carson Division of the Newlands Reclamation Project Do Not Exist under the Alpine Decree* (the "Alpine Petition"). In both the Orr Ditch and Alpine Petitions (hereinafter "the Petitions" or "the Petitions cases"), the Tribe alleges that certain water rights within the Newlands Reclamation Project (the " Newlands Project") are either unperfected or have been forfeited or abandoned. These petitions have been referred to the Federal Water Master and a final outcome with respect to these petitions is years if not decades away.

Near the end of 1996, Churchill County and the City of Fallon began to protest certain applications to change the point of diversion and place and manner of use of water rights adjudicated by the final decree in *United States v. Orr Water Ditch Co.*, in Equity No. A-3

(D. Nev. 1994) (the "Orr Ditch Decree"). Specifically, the change applications protested by Churchill County and Fallon involve changes to municipal and industrial use of Orr Ditch Decree water rights adjudicated for irrigation use within the Truckee Meadows and the protests involve allegations of forfeiture and abandonment. Two State Engineer Rulings involving those applications are presently on appeal to the Orr Ditch Court.

The proceedings and petitions involving protests to Newlands Project water rights and to Truckee Meadows change applications have been and will continue to be time consuming and expensive for all participants. The proceedings have consumed and will continue to consume substantial resources of the Office of the State Engineer and the courts.

A.B. 380 is intended to:

A. Provide a stimulus for the resolution of these administrative and judicial proceedings through the acquisition and retirement of a specified quantity of water rights within the Newlands Project;

B. Provide a stimulus for the dismissal of administrative and judicial proceedings involving changes to water rights appurtenant to former agricultural land within the urban areas of Reno, Sparks and Washoe County;

C. Provide a funding mechanism for the acquisition of water rights within the Newlands Project;

D. Provide a simplified procedure for changing the place of use of a surface water right within farms located in federal reclamation projects;

E. Provide that surface water rights are not subject to forfeiture and to set out specific guidelines regarding abandonment of water rights; and

F. Ensure that as agricultural lands evolve into urban areas, surface water rights appurtenant to such lands remain viable for municipal use.

III. THE PURPOSES OF A.B. 380 AND THE AGREEMENTS AND COMMITMENTS OF THESE PARTIES WITH RESPECT THERETO.

A. Providing a Stimulus for Resolution of Administrative and Judicial Proceedings Involving Newlands Project Water Rights.

Section 4 of A.B. 380 and the agreements and commitments of these parties with respect to it provide the stimulus for resolving the protests to Newlands Project change applications and the pending petition cases. They do so by providing for the acquisition, retirement and abandonment of 6,500 acres of Newlands Project surface water rights through the Newlands Project Water Rights Funds (the "Fund"). The Fund will be managed and administered by the Carson Water Subconservancy District ("CWSD") and acquisitions of water rights thereunder shall be administered by the CWSD under guidelines, which it develops. The CWSD will develop the guidelines in consultation with representatives of the federal, state tribal and local governments and affected parties and shall report annually to the federal government, the state and other funding entities.

During the negotiations leading up to A.B. 380 as enacted, the parties discussed the source of moneys for the Fund. Moneys for the Fund are expected to come from the State of Nevada ($4,000,000), federal appropriations ($7,000,000) and through a program in the Truckee Meadows which will require that an amount up to the value of .11 of an acre foot of a Truckee River water right be contributed to the Fund as part of the process for obtaining a commitment for water service to a new development in the Truckee Meadows. That program is expected to contribute $2,500,000 to the Fund without additional cost to Truckee Meadows developers because the present requirement of dedication of 1.11 acre feet of water right for each 1.0 acre foot of demand will be reduced. Additional possible sources of funding are also identified in section 4 of the Bill. A portion of the Fund shall be allocated to the Truckee-Carson Irrigation District as a negotiated offset to lost operating and maintenance revenues associated with the retirement and abandonment of 6,500 acres of water rights within the Newlands Project.

Surface water rights are to be acquired only from willing sellers. The surface water rights to be acquired may, but need not be, water rights under challenge in the change

application proceedings and petition cases. In either case, water rights acquired by the Fund will be retired and then abandoned. The Fund will acquire no more than 6,500 acres of Newlands Project water rights and once 6500 acres of water rights are retired and abandoned, whether by acquisition by the Fund or by any other process, including the final outcome of the Tribe's protests to change applications and the Tribe's petition cases, the authority to acquire water rights under this Bill will terminate.

When the total of (a) water rights irrevocably committed to sale, retirement and abandonment and (b) water rights finally determined to be abandoned or forfeited through the Tribe's protests or petition cases equals 6500 acres of water rights, the Tribe has agreed that any then remaining protests to change applications or appeals from State Engineer or court rulings thereon will be withdrawn or dismissed and its remaining petition cases will be dismissed. In addition, because it will take several years to acquire 6,500 acres of water rights, additional agreements and commitments have been made.

First, with respect to any particular water right, upon request of any applicant or respondent, the Tribe will agree to a stay of any pending protested change application or petition case. Second, any owner of a particular water right may proceed with the administrative and judicial proceedings involving the owner's water rights. If the final outcome is a determination that all or any portion of the water right has been abandoned or forfeited, the Fund will pay the Tribe an amount equal to the fair market value of the water right which has been finally determined to be forfeited or abandoned.

Finally, the Tribe has agreed to early withdrawal of protests and dismissal of litigation with respect to particular water rights in certain circumstances. For each water right for which an owner of a challenged water right obtains an irrevocable commitment of sale and retirement through the Fund, the Tribe will immediately withdraw and/or dismiss its challenge to an equal amount of water right of that owner.

For example, if owner X has water rights appurtenant to 2.5 acres of land under challenge and owner X delivers other water rights appurtenant to 2.5 acres of land owned by

owner X or owner Y for acquisition by the Fund, the Tribe would immediately withdraw its protest to owner X's change application. This potential for early withdrawal and/or dismissal of challenges should enlist water right owners in finding water rights for the Fund to acquire.

B. Providing a Stimulus for the Dismissal of Administrative and Judicial Proceedings Involving Truckee Meadows Water Rights.

The enactment and approval of A.B. 380 will result in the dismissal of pending administrative and judicial proceedings involving Truckee Meadows water rights. The City of Fallon and Churchill County have committed and agreed that if A.B. 380 is enacted and approved, they will withdraw all pending protests to Truckee Meadows change applications and will dismiss all pending litigation involving appeals of State Engineer Rulings on such change applications. They have also committed to refrain from making protests to future Truckee Meadows change applications on forfeiture and abandonment grounds.

C. Providing a Simplified Procedure for Changing the Place of Use of a Surface Water Right within Farms within a Federal Reclamation Project.

Section 2 of A.B. 380 will allow a surface water right within a federal reclamation project to become appurtenant to an entire farm. This will require an initial application to and permit from the State Engineer. Once that happens, the farmer may use the water right anywhere within the entire farm, provided that water duty and beneficial use limits are not exceeded.

D. Repeal of Forfeiture as a Ground for Loss of a Surface Water Right and Adoption of Guidelines for Presumption against Abandonment.

Section 3 of A.B. 380 will result in the repeal of a forfeiture as a ground for loss of a surface water right. Under N.R.S. § 533.060(2), certain surface water rights could be lost by five (5) consecutive years of nonuse. A.B. 380 repeals that section and expressly provides that a right to the use of surface water cannot be lost by nonuse alone.

As a result of that repeal, certain surface water rights will be subject to loss by abandonment. Under Nevada law, a right to the use of water may be declared abandoned only

upon a showing of nonuse for a substantial period of time coupled with evidence of intent to permanently forsake and desert the water right. A.B. 380 in subsection 4 of section 3 provides for a presumption that a surface water right has not been abandoned if any of several facts are established. That subsection is not intended to place a limit on the evidence which may be used to establish that a water right has or has not been abandoned. Instead, it is intended to provide some guidance on evidence which establishes a presumption of nonabandonment.

E. Ensuring that as Agricultural Lands Evolve into Urban Areas, Surface Water Rights Appurtenant to Such Lands Remain Available for Municipal Use.

Much of the urban growth in Nevada outside of Clark County has taken place on and will continue to take place on land formerly used for agriculture and to which there is appurtenant a surface water right. Frequently, the place and manner of use of the appurtenant surface water right is not changed for many years after the land has been converted to an urban use, even in communities which require dedication of water rights for municipal use in order to proceed with new development. It is in the public interest that such water rights not be lost but remain viable for other use. This is extremely important to all of Nevada and to Western Nevada in particular.

The combination of the repeal of forfeiture and subsection 3 of section 3 of A.B. 380 will satisfy that goal. Surface water rights appurtenant to land formerly used for agriculture, which land has been converted to an urban use, will not be lost through forfeiture or abandonment. Similarly, surface water rights appurtenant to land formerly used for agriculture which have been dedicated to or acquired by a water purveyor, public utility or public body for municipal use will not be lost by forfeiture or abandonment.

IV. EFFECTIVENESS AND APPLICABILITY OF A.B. 380.

Pursuant to section 6, A.B. 380 will be effective immediately. The authority under section 4 of A.B. 380 to acquire Newlands Project water rights will expire July 1, 2004.

Sections 1, 2 and 3 of A.B. 380 will be effective on passage and approval. However, they will not apply to any water right being challenged on forfeiture or abandonment grounds in legal or administrative proceedings pending on April 1, 1999. They will apply to any challenge which is brought after that date regardless of when the facts giving rise to the challenge arose. Finally, they will apply to water rights which, although under challenge on April 1, 1999, are no longer under challenge as a result of the Tribe's withdrawal or dismissal of protests and related judicial proceedings and petition cases as described above.

Thank you for allowing us to submit this joint testimony.

TRUCKEE-CARSON IRRIGATION DISTRICT

By: Ernest C Johnson

Title: President

Date: May 6, 1999

PYRAMID LAKE PAIUTE TRIBE OF INDIANS

By: [signature]

Title: Tribal Chairman

Date: 5/6/99

SIERRA PACIFIC POWER COMPANY

By: [signature]

Title: Chairman, President & CEO

Date: 5/6/99

CITY OF FALLON

By: Ken Tedford Jr.

Title: Mayor

Date: 5/6/99

CHURCHILL COUNTY

By: [signature]

Title: Chairman

Date: 5-6-99

APPENDIX C

Distribution List of Interested Parties Receiving the EA

APPENDIX D

April 25, 2000
Transfer of Federal Funds for A.B. 380
Water Rights Acquisition Program

Letter from Elizabeth Ann Rieke, Bureau of Reclamation Area Manager, to Edwin James, Carson Water Subconservancy District General Manager

April 25, 2000

LO-100
WTR-4.10

Mr. Edwin James
General Manager
Carson Water Subconservancy District
777 E. William Street, Suite 110A
Carson City, Nevada 89701

Subject: Transfer of Federal Funds for AB 380 Water Rights Acquisition Program

Dear Mr. James:

The Bureau of Reclamation (Reclamation) proposes to transfer to the Carson Water Subconservancy District (CWSD) for the Newlands Project water rights acquisition program a total of seven million dollars over a period of five years. Although no additional commitment of federal funds has been made at this time, it is possible that additional federal money will be needed to complete the planned acquisitions (6500 acres of water-righted land) under the program. This decision is intended to cover all federal contributions to the program.

The program was established in 1999 by the State of Nevada under Assembly Bill (AB) 380 to resolve ongoing administrative and judicial disputes about challenged Newlands Project water rights. Most of the challenges had been entered by the Pyramid Lake Paiute Tribe (Tribe) and/or the United States either through protests to water rights transfer cases filed by water users with the State Engineer or through petitions filed in Federal District Court. The grounds for the challenges include failure to perfect, forfeiture and/or abandonment.

As explained below, in transferring funds to the program, Reclamation must comply with its trust responsibility to the affected tribe. This letter sets forth Reclamation's decision on the trust responsibility issue.

As we have discussed in various meetings and communications with the parties interested in the implementation of AB 380, the United States government has a unique legal relationship with federally recognized American Indian tribes, which includes a trust responsibility to protect and maintain trust assets, such as water, land, minerals and other natural resources. Reclamation, as a federal executive agency, shares this responsibility. Reclamation policy expressly states: "Reclamation will carry out its activities in a manner that protects trust assets and avoids adverse impacts when possible. When Reclamation cannot avoid adverse impacts, it will provide

appropriate mitigation or compensation." As trustee, Reclamation must be the entity to determine, in consultation with the affected tribe, whether its trust responsibility is met in any given situation.

In the case of AB 380, Reclamation interprets the trust responsibility to make transfer of federal funds to the CWSD contingent on a determination that the acquisition program will not result in adverse impacts to the Truckee River inflows to Pyramid Lake, which are a trust asset of the Tribe. An adverse impact would occur if, due to the implementation of AB 380, the inflows are less than they would have been without AB 380. Thus, Reclamation is charged with making a determination whether the implementation of AB 380 will result in such an adverse impact.

Reclamation has undertaken that determination in the following manner. First, Reclamation prepared an extensive analysis of the impacts of AB 380 on Truckee River inflows. The analysis compared the impacts with and without the AB 380 program, using a wide variety of scenarios. Next, Reclamation provided that analysis to the Tribe and, at the Tribe's request, prepared additional scenarios. Reclamation then held a meeting to share the scenarios (Enclosure 1) with other parties interested in implementation of AB 380.

Throughout the process, it has been clear that the central issue in determination of adverse impacts on the Truckee River inflows is a projection of the rate of success the Tribe together with the United States (or, conversely, the water users) would have in litigation of the challenged water rights cases (the water transfer and petition cases). Depending on the projected rate of the Tribe's success in those cases, implementation of AB 380 may result in more or less "active" water-righted acreage than if AB 380 had not been implemented.

Given the importance of the so-called win-loss record, Reclamation invited interested parties to submit comments on the appropriate win-loss record to be used in making the determination of impacts on Truckee River inflows. Comments were initially received from the State Engineer (Enclosure 2) and the CWSD (Enclosure 3). Reclamation then issued a proposed decision for purposes of further consultation with the Tribe (Enclosure 4). The decision was based on the information received by Reclamation up until that time. The Tribe responded to Reclamation's proposed decision with two sets of comments (Enclosures 5 and 6). Reclamation then held a meeting with Tribal representatives to discuss their comments, and further consulted with one Tribal representative by phone.

The decision which follows was made after evaluation of the comments and an independent evaluation of the win/loss records of the Tribe (together with the United States) and the water users, respectively, at each stage of the ongoing administrative and judicial actions. As previously discussed, the central issue is the probability the Tribe and/or the United States would ultimately prevail in their challenges to water-righted acreage in the Newlands Project, if the cases were litigated to conclusion rather than settled under AB 380. However, the various transfer and petition cases at issue are at quite different stages. That difference creates significant difficulties in determining the probability of success of the Tribe and the United States. The determination necessarily involves making predictions, based on decisions issued to

date, about what decisions the State Engineer and the federal courts would make if the cases were litigated to conclusion.

It is important to note that the following analysis, including any win/loss estimates, has been prepared for purposes of this decision only and shall not have any bearing on any other administrative or judicial decision. Additionally, since the United States is a party to the administrative actions and litigation at issue, it is inappropriate for Reclamation to comment in any detail on the specific issues that are or may be before the State Engineer or the courts.

The parties who have submitted comments have made differing assumptions about what those decisions would be. The State Engineer and the CWSD have assumed that the win/loss record should be based on the decisions to date of the State Engineer and the Federal District Court. The Tribe argues that as a result of four issues on which it would likely prevail before the Ninth Circuit Court of Appeals and the past decisions of that Court, the win/loss record before the State Engineer and the District Court is not reflective of the ultimate outcome if the cases were litigated to conclusion. Thus, the question is: What view of the future outcome of these cases, if they were litigated to conclusion, has the best probability of being correct? Answering that question is no easy matter.

Based on a review of the probable win/loss record of the Tribe (together with the United States), Reclamation assumes that the ultimate win/loss record for the Tribe (and the United States), were the litigation to have been pursued to conclusion, would have been no higher than 60/40. Under each of the scenarios set forth in Enclosure 1, an assumption of a 60/40 win/loss record in the challenged cases leads to the conclusion that AB 380 implementation will decrease total Newlands Project diversions from the Truckee River. Based on those results, we conclude that the implementation of AB 380 is not likely to have an adverse impact on Truckee River inflows to Pyramid Lake.

Accordingly, after conclusion of the necessary environmental review and final action by our regional contracting office, Reclamation plans to transfer to the CWSD this year's portion of the federal funding for the Newlands Project Water Rights Fund.

I would be happy to discuss this decision with you or any other interested party.

Sincerely,

Elizabeth Ann Rieke
Area Manager

Enclosures

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Division of Water Resources
123 W. Nye Lane, Suite 246
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bc: LO-105

* All faxed without the Enclosures

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